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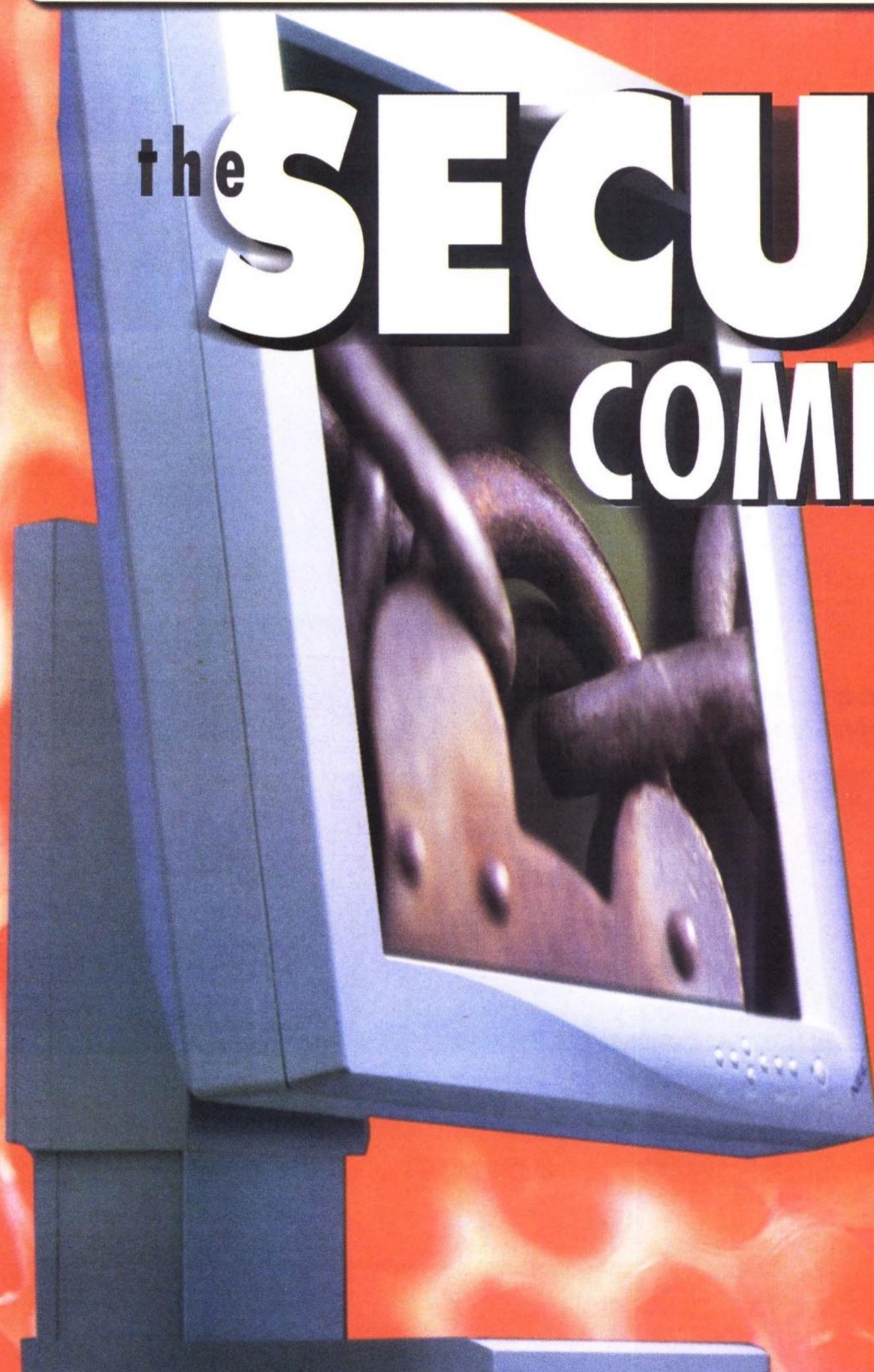
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B.C. (LOWER MAINLAND) EDITION AUGUST 1998 VOLUME 11 NO. 8

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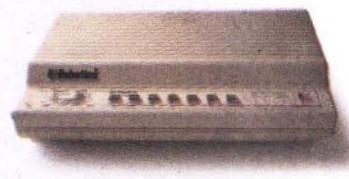
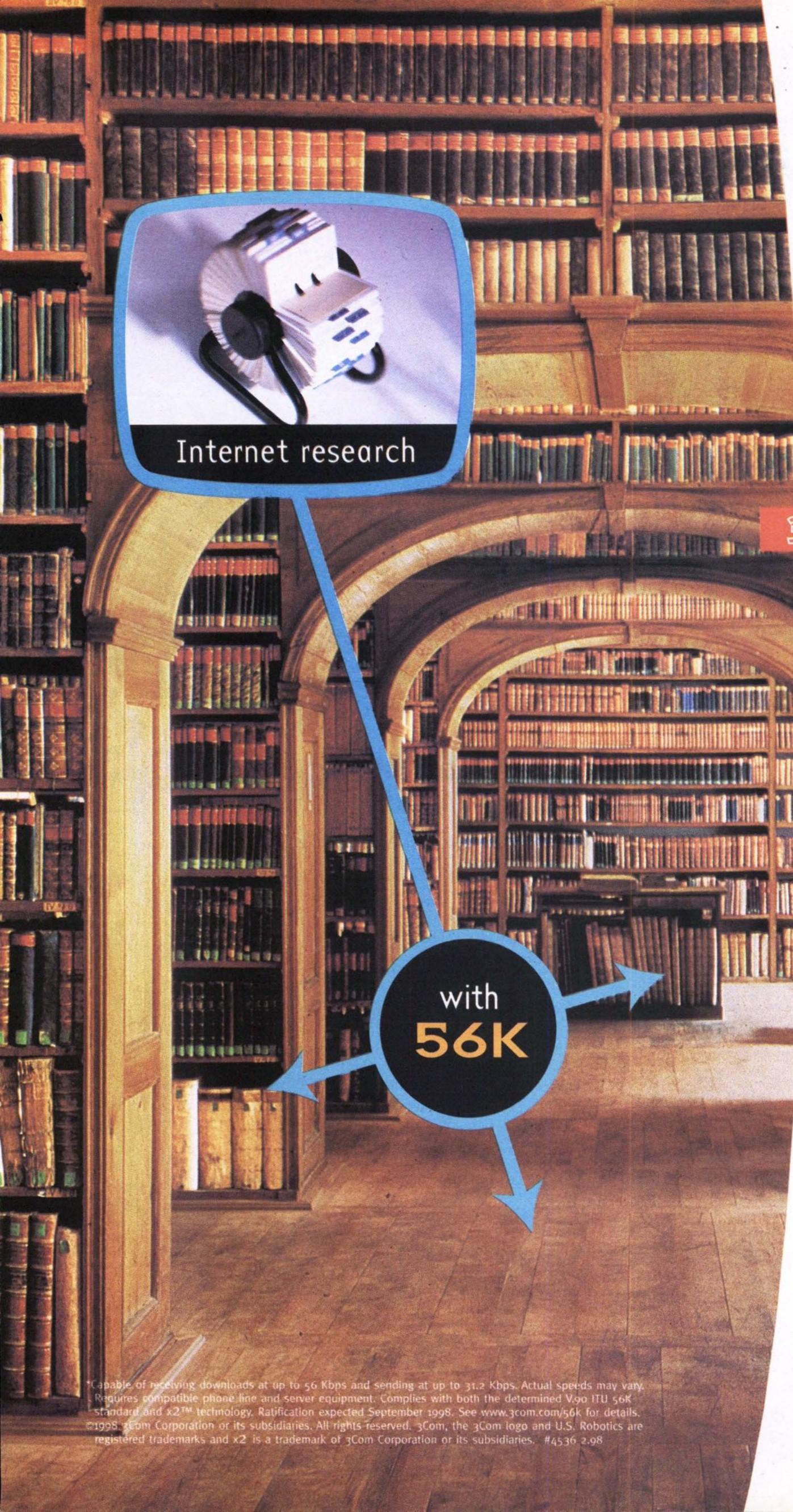
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A year half empty—or half full

This seems close enough to mid-year to take stock of where the personal computer industry has taken us so far, and what's likely to transpire during the rest of 1998. I wouldn't characterize any of the developments so far this year as earth shattering, but there are a few ground-laying events that will have an effect on our future options as consumers.

Socket 7 vs Slot 1

With Intel extending its proprietary Slot 1 design to the entry-level segment with its Celeron processor, Socket 7 and the chip manufacturers that use it, will be under increasing pressure. Intel trademarked the Pentium brand as a way to differentiate its fifth generation "586" processor from its competitors, and with the Pentium I and its Slot 1 architecture, closed the door a little tighter. CPU competitors such as AMD and Cyrix have typically had success in the entry-level market, competing most successfully with Intel's slower chips. They couldn't use the Pentium name, but they could use the open architecture of Socket 7. The Pentium is now part of history, and with the Celeron, Intel brings its most current architecture, including Slot 1, to the low-cost PC market.

PC manufacturers now face a decision of what kind of machine to build for the sub-\$1,500 market, which incidentally, is very hot right now. Some will go with Intel all the way, but others will keep Socket 7 alive for a while longer. Of note, both Compaq and

LETTERS

Drop the OS religious content

I don't know if your editorial department is asleep at the wheel or just looking to whip up a little sales through operating system religious wars. Whatever the case, I'm tired of anti-Microsoft operating system fanatics and their need to fight the defunct OS/2 vs. Windows jihad through the new proxy of Linux.

The recent tempest-in-a-teapot over the supposed merits and demerits of Linux is a good example. Like most programmers, I understand perfectly the technical merits of Linux. Unlike these zealots, I also understand that the average SOHO [small office/home office] user has a hard enough time with today's no-brainer Win 95 and Mac machines, which are without a doubt the easiest systems to use.

For a paper such as yours to falsely and repeatedly suggest that Linux is in any way as easy to set up or use as pre-installed Win 95 does a disservice to your readers. Sure, a technically adept user can install and use Linux. More likely, the average SOHO user will wipe out his hard drive trying to set it up. At this point, without a machine, he can forget about Linux's "tech support," which consists of a bunch of hackers you have to track down through the Internet.

It's time to recognize that the market prefers easy-to-use interfaces and install procedures, even at the expense of (often irrelevant) hidden technical functionality. Freeware Linux has a very long way to go

before it gets into this league.

Luke Rollins

Don't pick on the Celeron chip

I just finished reading your article "The fastest Pentium IIIs" (TCP Lab Test, June '98) by Steve Halinda and was a little dismayed by the negative light in which you portrayed the Intel Celeron processor. I'd like to take issue with the statement that the iComp numbers speak for themselves. This is simply not true.

The area this chip shines in is 3D game performance for the price, something the iComp numbers don't show. As a cost-conscious home user, I don't need blistering speed for word processing and surfing the Internet, but one thing I really notice is a slow 3D game or slow multimedia. The Celeron has the same core as a Pentium II chip, which means it also has the same floating point number calculating ability as a Pentium II. The one area where you really see the effect of this is in 3D games and some other multimedia applications.

If you run benchmarks on real 3D applications, such as Quake II, you quickly realize the strength of this chip. It simply blows away the closest priced competition, such as the 233 [MHz] MMX, and the AMD and Cyrix chips.

For those who are thinking of upgrading, and are looking at the low-end CPUs, this chip is an excellent choice, as it is very low priced, and it allows users to make the jump to a Slot 1 motherboard, which will be

important when it comes time to upgrade (I'd be willing to bet that Socket 7 and Super 7 motherboards will be virtually non-existent in a year or so). I think Intel has done a really poor job of marketing this chip, as usual they focus on style over substance.

David Begg

Get an accountant

You carried a letter to the editor (& reply) from Jeff Johnston, in the July edition, wherein he stated that Rod Lamirand's article on SOHO was incorrectly calculating capital cost allowance on a computer used in a home office.

Unfortunately, his proposed calculation and solution, although interesting, is also NOT in compliance with the *Income Tax Act*.

Anybody running a business, be it at home or elsewhere, should not assume that income tax compliance or planning is simple—just try reading the first few pages of the approximately 2,500 pages of it!

It is well worth making friends with your local professional accountant! Or else you may be making more friends with Revenue Canada Taxation than you first thought!

Chris Myburgh CGA

Jeff Johnston's letter on Rod Lamirand's article is not fully correct when it comes to the calculation of capital cost allowance (depreciation).

If a \$3,000 computer is purchased on July

Continued on page 11



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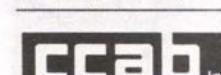
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WHAT'S NEW

Corel lays off 530 workers • Beleaguered Ottawa-based software giant Corel Corporation announced "better than predicted" financial results for the quarter ending May 31, 1998, with a net loss of only \$8.3 million on net sales of \$63 million for the quarter. Corel took advantage of the "good" news to lay off about 20 percent of its workforce by essentially shutting down its WordPerfect

research and development facilities in Orem, Utah and transferring the work to Ottawa. Few of the Utah personnel will be moved as Corel expects to hire some 190 additional staff in Canada and Ireland to handle the WordPerfect related activities of the downsized company. The net loss of employment at Corel is estimated at about 340 jobs. The transition is expected to take a couple of months

to complete.

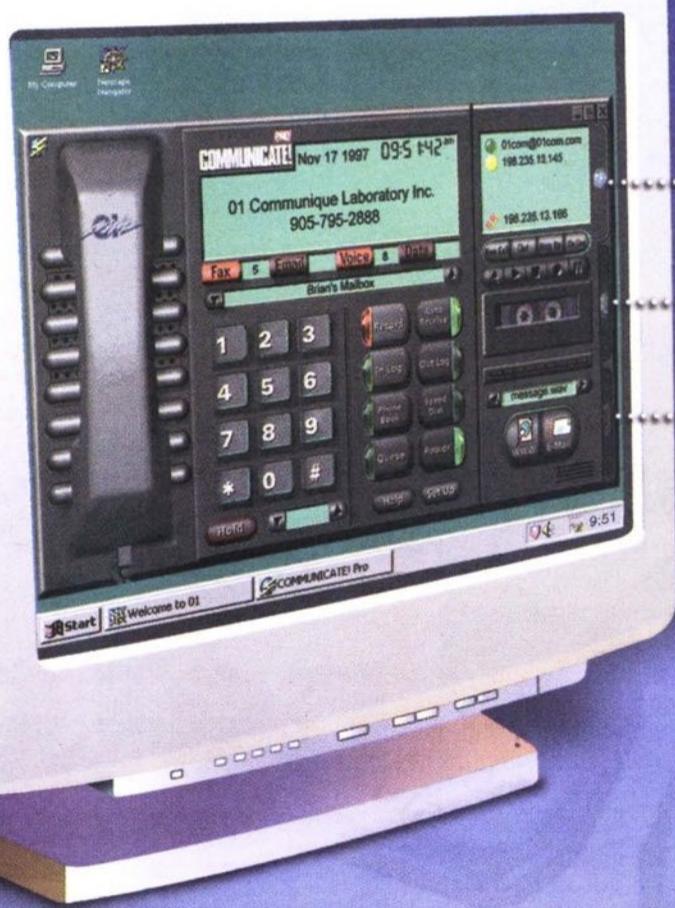
According to Michael Cowpland, Corel's founder, chief executive and president, "This decision was not taken lightly, rather with the best interest of our customers and shareholders in mind. We'll see increased R&D synergies across product lines and substantial cost savings from this consolidation. It strengthens our products, strengthens our fiscal outlook

and sets the stage for the next two years."

The company seems to be hoping to achieve a reversal of its slide in sales and profitability on the order of Apple's recent return to profitability. Corel is still a significant player in the graphics, retail word processing software, and digital photography markets, and it has announced a re-dedication to its flagship CorelDRAW! and WordPerfect brands.—JE

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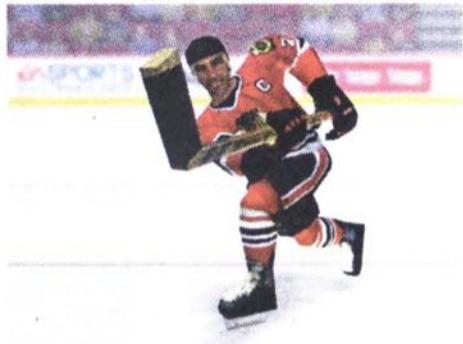
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E3 '98 displays computer gaming's new Golden Age • The 4th Annual E3 (Electronic Entertainment Expo) held in Atlanta May 28-30, provided a global showcase for the latest and greatest fun technology.



EA's NHL 99 (above) and Homeworld (below) were two of the more than 1,600 new games at E3.



The unshakable conclusion to be taken from this year's show is that interactive entertainment is both pushing and benefiting from radical advances in key areas of computer and communications technology.

Over 1,600 new games and educational titles were on display to the more than 40,000 attendees. Significant trends at the show included real-time 3D graphics in about 60 percent of the new PC games; a "multiplayer" component in more than half of the new titles; and over 100 new titles are being developed entirely for use on the Internet. Lest critics conclude that too much fun was being had at the show, organizers claimed about 30 percent of titles shown had an "educational" component.

E3 has become perhaps the technology industry's flashiest show. Behind all the hoopla is a very healthy industry. In 1997, interactive entertainment in the United States alone generated over US\$16 billion in revenues, not including computer and video game hardware sales, according to a study by

Continued on page 10



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M725

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- Three PCI, two ISA, and one AGP slot
- AMI Plug 'n Play flash BIOS
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- Integrated 16-bit 3D sound on board
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- Supports Ultra DMA HD, ACPI and Legacy PMU
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- ATX Power Management features
- AMI Plug 'n Play flash BIOS
- Bidirectional parallel port / ECP / EPP
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- Supports USB interface and infrared connector



M572

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- Two DIMM and four SIMM slots
- Supports Ultra DMA hard drives and 1 MB transfer rate floppy disk
- Four PCI and three ISA slots
- Up to 83.3 MHz bus speed
- AMI Plug 'n Play flash BIOS
- ATX form card port and P 'n P features for easy CPU installation
- Bidirectional parallel port / ECP / EPP
- Integrated 16-bit 3D sound on board



M571

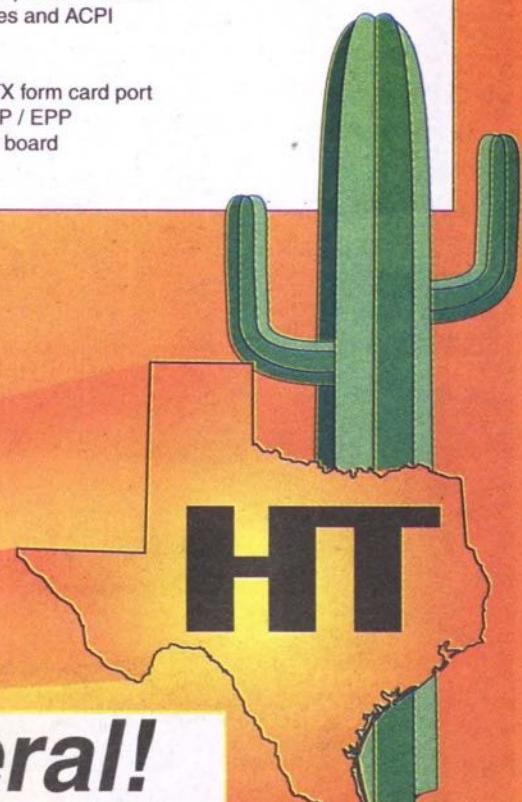
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WHAT'S NEW

Continued from page 8

the Interactive Digital Software Association (ISDA), the organizers of E3. This figure includes US\$5.1 billion in software, US\$1.3 billion in licensing and distribution of software, and US\$9.6 billion in indirect revenues (including packaging and printing).

Interestingly, video console software sales,

at US\$3.3 billion in 1997, were almost double PC game sales of \$1.8 billion.—JE

Intel intros Pentium II Xeon processor

- SANTA CLARA, Calif.—In a press conference in late June accompanied by a live Webcast for viewers who tuned in on the Internet, Intel Corp. introduced its new, high-end workstation and server processor, the Pentium II

Xeon. The 400 MHz processor completes Intel's transformation into a firm that designs for multiple market segments instead of just one, the PC.

Designed for high-end uses like engineering workstations and high-traffic transaction servers, Intel hopes the Xeon will expand its markets beyond the PC industry, where profit margins have been shaved to near transparent

cy by price wars and sub-US\$1,000 home-oriented machines.

At the introduction, Intel officials Patrick Gelsinger, corporate vice-president and general manager, business platform group, and John Miner, corporate vice-president and general manager, enterprise server group, touted machines built around the new central processing unit (CPU) as "the fastest machines on the planet" and trotted out some benchmark graphs to prove it.

The Xeon uses larger and faster Level-2 caches, multiprocessing capabilities and a 100 MHz system bus to deliver its turbocharged performance. Systems using them can be scaled to two, four or eight concurrent processors, a capability that Intel says brings "unmatched" price-to-performance values to the market.

The Xeon chip is based on a 0.25 micron P6 microarchitecture core operating at 400 MHz, with 512 KB and 1 MB Level-2 cache options that run at the same speed as the processor itself.

Discreet Logic, MGI untie the knot • MONTREAL, Que. (NB)—Canadian firms Discreet Logic and MGI Software have decided to annul their engagement before the marriage ceremony. MGI said the firms have decided to "work together," instead of merging, while MGI does a feasibility study on adapting Discreet's high-end graphics technology to a consumer marketplace. Discreet said more brusquely that the firms have decided current conditions "could result in significant delays in the realization of previously discussed anticipated benefits and synergies" and so decided to call the whole thing off. Discreet first proposed canceling the merger agreement.

Contact: Discreet Logic <http://www.discreet.com>
MGI <http://www.mgisoft.com>

Iomega introduces mini-mass storage for handheld devices • Iomega Corp. has rolled out Clik!, a unique storage technology for handheld devices. Clik! is a 40 MB removable hard drive system. The external Clik! drive weighs 56 g (2 oz.) and measures about 8.45x5.3x.6cm (3.33x2.1x.25 in.). The removable hard drive cartridge portion is about 5.3x5x.25 cm (2.1x2x.1 in.), and weighs about 10 g (.35 oz.). The Clik! drives and removable cartridges were developed for use with ultraportable gadgets such as digital cameras, handheld PCs, Gameboy-style video game entertainment devices, and digital phones.

A variety of vendors have partnered with Iomega to support the new storage standard, including Kodak and Hewlett-Packard. Both companies plan to release products incorporating Clik! by the end of 1998. Clik! is also designed for compatibility with notebook and desktop PCs, and a variety of PCs are expected to be able to support the miniature cartridges.—JE

Contact: Iomega <http://www.iomega.com>

VideoBrush SDK for image stitching • CARPINTERIA, Calif. (NB)—VideoBrush Corp. has announced the firm's first video processing product, a Software Development Kit (SDK) for commercial PC imaging products. The software lets users meld video panorama shots into still images covering up to 360 degrees, or stitch scanned still images together for the same effect. Users also can change

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Maxtor announces new DiamondMax hard drives

• Maxtor Corp. has announced the release of two DiamondMax hard drives: the DiamondMax Plus 2500, a 10 GB, 7,200 RPM EIDE drive with average seek time of 9

milliseconds (ms); and the DiamondMax 3400, available in capacities up to 13.6 GB, with 5,400 RPM, and seek time of 9 ms. The estimated retail price for both models is \$599.

The 2500 model is targeted at high-end desktop PC use for digital video or graphics, or high performance for games or audio. The 3400 model is a mainstream drive, suitable for

either business or consumer desktops. Both drives are available now, and come with Maxtor's NoQuibble Service, including MaxInfo, an automated tech help line, and MaxFax, an automated faxback service, as well as email-based service via the Web, and weekday phone help service.—JE

Contact: Maxtor, Tel: 800-2-MAXTOR <http://www.maxtor.com/>

Mitsubishi adds 17-inch monitor to Diamond line • Mitsubishi Electric Sales Canada Inc.'s latest entry into the general business and desktop publishing monitor market is the 17-inch Diamond Plus 70. This model features an advanced Diamondtron CRT (cathode ray tube), with ultra fine 0.25mm aperture grill dot pitch, and maximum resolution of 1,280x1,024 at 64 Hz. ►

Letters

Continued from page 6

1, then the CCA for this depreciable asset for the year would be \$450 ($3,000 \times 0.30 \times 0.5$). The only time one would prorate this deduction is when the fiscal year of the business in which the asset was acquired is less than 12 months. I suspect Mr. Johnston misinterpreted Tax Bulletins 175 (paragraphs 2 and 3), and 285 (paragraph 13). As well as Income Tax Regulation 1100(3), which is the foundation for this rule.

Bulletin 172 states "Because capital cost allowance is based on the length of the taxation year and not on the period during the year that depreciable property may have been used to in earning income...."

The taxation year for a business is its fiscal year. This should properly clarify the issue at hand. Like office in the home expenses, CCA cannot be used to create or increase a business loss.

Austin Guerin

Can't blame the post office for this one

My buddy Geordie asked me the other day, "Why did I send him a New Year's card via email when it was June 8, 1998?"

I had to sit and think, and yes I sent a few of my friends cards at New Year's Eve and I did indeed send one to Geordie but it arrived six months late!

Goes to show, even letters via email get lost in the mail!

Kevin Brown

On or off?

I was wondering, is leaving the computer on for 24 hours a day bad? I heard that nowadays most computers are burned and tested prior to shipping and so leaving it on 24 hours a day is not bad for the computer. Is this true?

I'm just curious because I want to leave mine on (well the monitor is turned off, just the CPU is on) since I'm planning on having a digital answering machine for voice and faxes.

Sheila Patel

GB replies: Generally, monitors should be protected with a screen saver or set to turn themselves off with power management. Some users set their hard drives to automatically spin down, again using power management (this is not always possible or recommended).

Computer components should be protected with a good surge and spike protecting (and EMI/RFI-resistant) power bar, or with an uninterruptible power supply.

Data should be backed up.

With all of these issues handled, I leave my computer(s) on 24 hours a day and find it very convenient. Some users claim that the reduced strain on the power-supply transformer(s) actually increases system life. Of course, if a fan fails, your CPU could overheat and you could be in serious trouble. Some newer systems have heat sensors that can automatically deal with this, too.

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WHAT'S NEW

According to Elan Azar, Mitsubishi Canada's general manager, "The Diamond Plus 70 is the most recent addition to the new Plus line of monitors that will address the needs of multiple business applications. The Diamond Plus 70 uses a Mitsubishi P-NX DBF [dynamic beam forming] electron gun to allow the Plus 70 to be more than an inch shorter than its predecessors, and one of the

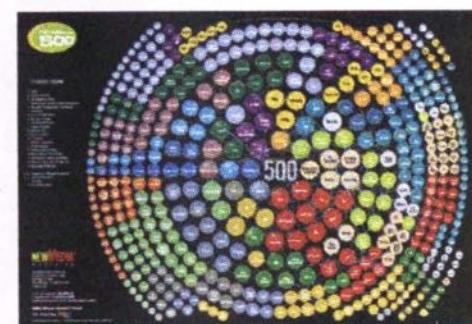
most compact 17-inch CRT monitors in the world." The Diamond Plus 70 has a recommended price of \$799, which includes a three-year parts and labor warranty. Those taking advantage of the Mitsubishi Corporate Partners Program are guaranteed a replacement for a damaged monitor within 48 hours.—JE

Contact: Mitsubishi, Tel: 905-475-7728

Microsoft and Intel ranked top • SAN MATEO, Calif.(NB)—A ranking of the top 500 digital media providers by *NewMedia Magazine* names Microsoft and Intel as the top two firms in the industry. *NewMedia* says the report highlights connections between content providers and technology companies. The report rounds out the next 18 firms as Sony, Worldcom, TCI, Sun, Time Warner, IBM,

Hewlett-Packard, Cisco, Disney, News Corp., AT&T, Cendant, Lucent, Bertelsmann, America Online, Yahoo, Electronic Arts and Cox Enterprises. The magazine is offering a US\$29.95 poster that it says illustrates how these key players relate to each other in their converging digital world.

NewMedia has also just announced its sixth annual *NewMedia Invision 98 Awards Festival*, to be held in San Francisco, Nov. 11-13. The festival honors the best digitally created content in more than 40 categories and



usually draws 1,000 entries or more, mostly from professional graphics artists. A panel of about 70 judges weighs the merits in seven major areas. The deadline for entries is Aug. 1. See the magazine's Web site for more information on the contest.

Contact: *NewMedia* <http://www.newmedia.com/500>



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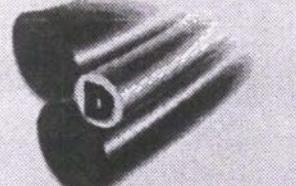
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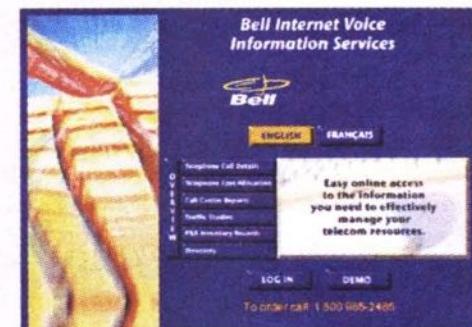
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Bell Canada offers telecom data on Web • TORONTO (NB)—Bell Canada, a unit of BCE Inc. has announced Bell Internet Voice



Information Services (BIVIS), an online service that will give business telephone subscribers access to information on their telecommunications activities and costs 24 hours a day via the Internet.

BIVIS provides access to critical telecom reports including telephone call details, telephone cost allocations, call centre reports, traffic studies, private branch exchange (PBX) inventory records, and corporate directory listings. Customers can select only the services they need, for a monthly fee that starts at 35 cents per line.

Bell Canada spokesman Don Hogarth told Newsbytes that the service is comparable to the customer having its own call-detail recording gear, but the customer avoids the expense of that equipment and much of the employee time and effort needed to analyze the data.

While some of the information BIVIS provides would be available to customers in the monthly bills they get from Bell, he said, "it's a way of tracking, on a real-time basis, your calling. Of course, the bills are once a month—this is literally hour to hour, day today."

Contact: Bell Canada Tel: 800-985-2486
<http://ivis.bell.ca>

What's New is compiled by Megan Johnston, David Tanaka and Jeff Evans.

WHAT'S NEW

manufacturer of CRT and flat-panel monitors and notebook PCs, has announced a new, high-resolution scanner in time for Comdex Canada. The S1200 Ultra High Performance Scanner is a 30-bit flatbed SCSI II scanner with 600x1,200 dpi optical resolution (9,600 dpi with interpolation), at a suggested retail price of \$289. The scanner's Cold Cathode Lamp, which lights up the target images for digitization by the scanner's single-pass, color CCD scanning element, is rated for at least 20,000 hours of use. Claims Sceptre's Canadian sales and distribution manager, Richard Gallegos, claims, "Now, every computer user who needs a high quality high performance compact scanner will be able to afford one."—JE

Fisher-Price teaches social skills and academics • Knowledge Adventure has published a new game for preschoolers and kindergarten students for developing early learning and social skills in preparation for school. According to Leslie House, vice-president of research at Knowledge Adventure, "Starting school is such a big step for children and parents alike. Fisher-Price Ready for School-Kindergarten makes that step easier by addressing the critical developmental milestones of early childhood such as telling time, following directions and recognizing words."

Fisher-Price Ready for School-Kindergarten features six characters for the child to identify with, and offers 20 activities to promote early learning skills such as telling time, identifying shapes, colors and letters, building sentences, and basic math. The learning games are supported by music, animation, and songs with "educational lyrics."

In addition to straightforward edutainment elements, the software offers training in social skills and safety.

Fisher-Price Ready for School has a street price of about \$28, and is compatible with Macintosh and Windows 3.1/95 operating systems running on multimedia capable computers.—JE

Contact: Knowledge Adventure, Tel: 800-545-7677, <http://www.knowledgeadventure.com>

Art student speeds from PlayStation sims to racing career • Aaron Povoledo, a former student in the Ontario College of Art's film and photography program, recently won the Canadian National Formula Ford race at the Montreal Grand Prix, and credited part of his success to "training" on a Sony PlayStation video game console. Povoledo uses a PlayStation to familiarize himself with the tracks he is to race on. With access to the real tracks being restricted and some racing sims offering exact 3D recreations of courses, he can spend an unlimited amount of time practicing on the "virtual" track.—JE

Toronto Stock Market mixes money, high-tech, and fun • In this age of electronic global finance, it seems odd that nobody ever thought of using computer technology to create a virtual stock market where anyone could play without losing their shirt—until now, that is.

Stock Market Place, a high-tech learning and entertainment centre, opened in Toronto on June 24, offering a (simulated) wealth of opportunities to learn how the stock market works. Located at 130 King St. W., only steps Bay Street, Stock Market Place is built around a mass of video screens and electronic boards that display continuous news and data on the Canadian and world financial markets. Online connections and interactive games challenge visitors to play with virtual money and test their knowledge, skill and luck.

According to Rowland Fleming, the president and chief executive officer of the Toronto Stock Exchange, "It's time to bring the world of the stock market from Bay Street to Main Street, and to help Canadians discover that learning about investing can be both rewarding and fun. If you're an investor, or plan to become one, Stock Market Place is an ideal investment of time for your next trip to downtown Toronto."

Of course, there is no such thing as a free lunch in the world of high finance: admission is \$5 for adults and \$3 for students and seniors, though children under 12 and pre-booked school tours are free.—JE

BeOS 3.0 upgrade released • MENLO PARK, Calif. (NB)—Be Inc. has released an upgrade to its Be Operating System (BeOS) release 3. Available now as a free download, called BeOS release 3.1, for both Intel Pentium and PowerPC systems, the upgrade adds support for DOS FAT16 and FAT32 file systems, among other enhancements.

Reading and writing to Microsoft DOS file systems is important to an operating system (OS) that is meant to be specialized, and not a general-purpose OS. BeOS is highly optimized for working with multimedia, and has always maintained that it is not in any form competition to Microsoft. The DOS add-on module complements existing support for ISO9660, Mac OS (HFS), and Be file systems, the firm said.

The upgrade also adds support to a variety of hardware components, from motherboards to sound chips. In terms of enhancing usefulness of BeOS on systems used mostly for general-purpose computing, version 3.1 includes preliminary support for configuring and using ISA (Industry Standard Architecture) Plug and Play cards, including internal modems.

Current BeOS 3.0 customers may download the 3.1 patch free of charge from Be's Web site.

Contact: Be Inc. <http://www.be.com>

Canada Payphone plans public Internet terminals • MENLO PARK, Calif. (NB)—Atcom/Info has signed deals with Canada Payphone Corp. and King Products that calls for the companies to incorporate its CyberShell software on 300 public Internet terminals across Canada.

Atcom/Info is currently demonstrating its CyberShell proprietary public PC operating system technology that provides remote network management on King Products's multimedia terminals at Supercomm '98. The company says CyberShell is the operating system for King flat-panel touchscreen, multimedia networked terminals, running on top of Windows NT.

The public Internet terminals will be installed in such areas as hotels, airports, train

stations, and convention centers across Canada.

Click, click for Web Imaging • CAMPBELL, Calif. (NB)—An alliance between Eastman Kodak's Professional division and Live Picture Inc. involving Internet imaging is bearing fruit, in the form of four camera packages.

All are designed to work across Kodak Professional's entire line of digital cameras. The first kit is designed especially for use with the Kodak Digital Science DC220 zoom camera pro edition, and is listed priced at US\$525, excluding the camera itself. The kit includes a new version of Live Picture PhotoVista panoramic software, developed in partnership with Kodak exclusively for the Kodak Professional kits. Also included are a trial version of Live Picture Reality Studio software and the Kaidan KiWi panoramic tripod head to simplify the process of shooting a series of images to create 360-degree panoramas. Live Picture's PhotoVista package automatically aligns a series of photos to create a seamless 360-degree panoramic image which can be saved in either the JPEG or FlashPix file format. FlashPix images, an exclusive feature among panoramic images viewable on the Internet, enable users to zoom in on images.

A second kit is for use with the DC260 zoom camera pro edition, and is also priced at US\$525 (camera sold separately). The kit includes the custom edition of Live Picture PhotoVista, a trial version of Live Picture Reality Studio, and the Kaidan KiWi panoramic tripod head.

An Interactive Imaging Solution SLR is designed for single lens reflex (SLR) cameras. Priced at US\$1,195, this kit includes PhotoVista and a fully enabled version of Reality Studio. Also included is the Kaidan QPX 2 panoramic tripod head.

Contact: Kodak <http://www.kodak.com>

Contact: Live Picture <http://www.livepicture.com>

What's New is compiled by Megan Johnston, David Tanaka and Jeff Evans.

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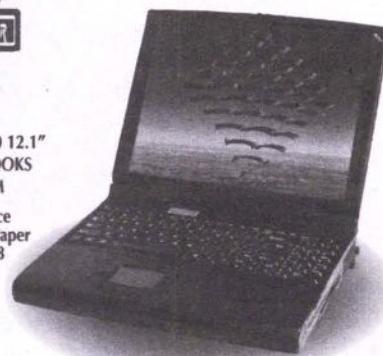
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SIS/TX chipset, Approx 2hrs battery life,
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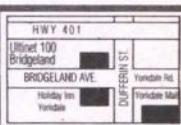
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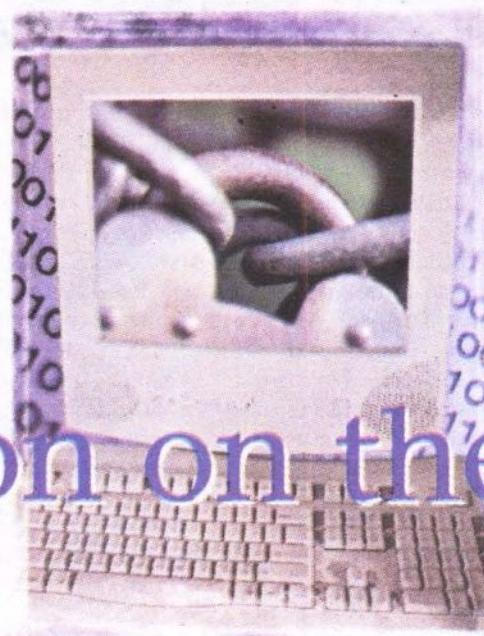
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Encryption on the desktop

By Rod Lamirand

Part I: Why encryption?

Standardization and computing power have brought us to a place where encryption applications can easily and quickly secure data sitting on your hard drive or traveling over the open Internet. And it is this mass adoption of the Internet as the communications channel of choice that adds the last important factor needed to spur developers into action—a potentially huge market.

It isn't surprising, then, that products based on various forms of encryption are beginning to arrive, give-aways and trial offers are hitting the Net, and encryption-breaking challenges are being announced every month. Unfortunately, terms like algorithm, key and cipher often induce a glazed look in the eyes of the average computer user, making cryptography an area they don't often investigate.

However, with increased use of the computer and the Net you might want to wade into that pool and get a feel for the water. The rest of the world is jumping in, so read on and find out about encryption basics, recent developments in the politics of encryption and, a look at some of the programs available today.

Why encryption is hot today

Encrypting written words is nothing new. In this century, encryption gained a high profile when the Allied Forces decrypted German codes during Second World War, and really took off in the '70s when more powerful computers combined with mathematical research to produce new forms of encryption. Banks and governments have been improving their information security with various forms of encryption ever since.

Today, the number crunching ability of computers sits on practically every desk. One of the programs reviewed later in this article has a minimum hardware requirement of a 386SX PC, and yet the developer is so confident that its encryption is secure, it is offering a US\$5-million reward to anyone that can break it.

Equally important to the mass use of encryption is the widespread adoption of Windows. A common desktop environment eases some of the past problems associated with communicating between different operating systems and programs.

Neither the mass use of PCs or a common platform would have mattered, however, if it weren't for the fact that the Internet arrived

Once the province of big business and government, encryption is poised to become a mass phenomenon

out of nowhere, connecting the world in a matter of a few years, and becoming an essential tool for many people.

While the security of information traveling the Net is a global concern, it has primarily been the business and financial communities that have pushed schemes to keep data secure. Now that we are all using the Net as an extension of our desktops, the lines between data on a drive and data on a server are blurring and encryption is becoming important.

How secure do you want it?

One of the problems with scrambling your data is that what was sufficiently difficult to decrypt a few years ago may now be easy. And, of course, what we encrypt today may not be secure in the future.

It wouldn't be easy to crack even a relatively weak encrypted message using your home PC. Using it, it would take you or me one week of full-time processing to crack 40-bit encryption. And to crack a 56-bit encryption algorithm, you'd need a special tool called a Field Programmable Gate Array. Even then, a single computer would take 38 years to try all possible key combinations.

That sounds like pretty good security, except that a company using multiple computers could bring that 38 years down to 13 hours, and a government agency, such as CSIS (Canadian Security Intelligence Service, also known as Canada's spy agency), could do it in less than one minute!

One 56-bit encryption system known as Data Encryption Standard (DES) has been put forth as secure by the American government and proven to be less than that. Last year a group called DESCHALL showed that the DES encryption strategy could be broken.

The group checked nearly 18 quadrillion keys by linking together tens of thousands of volunteer computers over a 140-day period. How likely is it that this much energy could be brought to crack your email? Not likely, but the point is, processors are very rapidly becoming more powerful. A 56-bit encryption system might suffice for today but what about tomorrow? And do we want an encryption standard that can be deciphered at all?

Crack the code challenge

Encryption companies have begun offering rewards to individuals or groups that can crack their encoded messages. Challenges by such companies are a great way to get attention. However, if the encrypted information is cracked the company offering the reward has to pay up. Challenge payouts in the past two years have ranged from \$5,000 to \$10,000, but recent challenges have seen crackers fail to decrypt the encoded messages. The most ambitious challenge to date is currently being offered by Jaws Technologies Inc. The Calgary-based company is offering a prize of US\$5 million to anyone who can crack its encryption code!

It's not likely that anyone will collect US\$5 million from Jaws because we are at a point where we can encode information so that it is truly unbreakable—and that is the problem. Governments around the world, in particular, the American government, are afraid that the borderless Internet combined with uncrackable data spells danger.

National security?

Countries such as France, Iran, Iraq, Russia and China have laws that prohibit or regulate the use of cryptography. For example, in the United Kingdom and Germany it is illegal to transmit encrypted data by radio communication. In some countries, the use of cryptography is restricted completely. In France it is illegal to encrypt data at all.

And so, various proposals have been concocted to make strong encryption illegal. At this very moment you can surf the Net and buy encryption products, some of which can only be sold and sent to American and Canadian addresses, and others that can only be sold and shipped in the United States. However, the question arises whether any country in the world could control and/or contain encryption technology. Some companies have been very imaginative getting around export laws, going so far as to print a whole book containing nothing but machine language (books are not subject to the U.S. strong-encryption, software embargo).

Perhaps the futility of trying to contain strong encryption is winning out because,

recent actions by the American government (such as granting permission to Netscape and Microsoft to use 128-bit encryption for business-level financial software) indicate reality may be overcoming technophobia.

Although there are indications the Canadian federal government will support an unencumbered encryption industry, it is still sniffing the wind: "Other countries are also currently examining their encryption policy options, Industry Canada is therefore examining the evolving directions of Canada's major trading partners to ensure its industry and economic interests are not disadvantaged and to discourage unnecessary obstacles to global trade and commerce." This sounds like a continuation of the current situation.

At this time there are no laws in Canada regulating the export of strong encryption. But there is a voluntary agreement put forward by the U.S. and signed by Canada and others. Our signature indicates we will abide by the U.S. export embargo on strong encryption for another year or so. At that time we may or may not support whatever comes out of Washington.

Other trends indicate the U.S. is likely to ease many of these restrictions anyway. The proliferation of software and hardware products that utilize various forms of strong encryption would be all but impossible to stop regardless.

Part II: Encryption products

Here is a look at some of the products available today to secure your data for the average computer user.

Norton Your Eyes Only

From: Symantec Canada Ltd.,
895 Don Mills Rd., 500-2 Park Centre,
Toronto, ON M3C 1W3
Tel: 800-365-8641
Fax: 416-441-0333
<http://www.symantec.ca>
Estimated street price: \$69.95

Norton Your Eyes Only (NYEO) for Windows 95/NT is available in English or French. The program uses the RSA (Rivest, Shamir and Adelman, the surnames of its inventors) public key encryption engine to secure files, folders and email messages.

Public key encryption was developed in
Continued on page 22

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ATX Mid-Tower Case/w CSA Power Supply
 104-keys Win95 Keyboard
 Genius NetMouse
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233MHz w/512KB L2 \$1,295
266MHz w/512KB L2 \$1,345
300MHz w/512KB L2 \$1,485
333MHz w/512KB L2 \$1,680

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 w/6x86MX233MHz \$180.00 | w/6x86MX266MHz \$215.00

Triton II Power Station

Features:
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 1.44MB Floppy Drive
 2.1GB UltraDMA-33 IDE Hard Drive
 2x Ultra DMA Bus Master IDE Controller
 PCI Cirrus Logic 5446 Windows Accelerator w/ 1MB DRAM
 2x16550 UART Serial, 1 Bi-Directional Parallel
 14" Non-Int SVGA Monitor .28mm dp
 15" Mid-Tower Case with 200W CSA Power Supply
 104-keys Win95 Keyboard
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 2 Year Parts & Service Warranty



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233 multimedia.....\$ 890

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ATI Xpert@Work AGP Card 4MB/8MB	\$115/150
ATI Xpert@Play AGP Card 4MB/8MB	\$140/174
ATI TV Tuner Card	\$115.00
Creative Labs 3D Blaster Voodoo2 PCI 8MB/12MB	\$275/335
Matrox Millennium G200 AGP 8MB SGRAM	\$179.00
Matrox Mystique G200 AGP 8MB/TV Out	\$179.00
Matrox Productiva G100 AGP 4MB/8MB	\$85/103
Cirrus Logic 5446 PCI w/1MB exp. to 2MB (MPEG)	\$26.00
Cirrus Logic 5465 AGP w/4MB RAMBUS	\$60.00
Cardplex i740 AGP 8MB	\$90.00
S3 3D Virge DX PCI w/4MB EDORAM	\$44.00

Monitors

ADI 4PC 15" N/L/R(1280x1024,.28mmDP)	\$260.00
ADI 5PC/5G 17" N/L/R(1280x1024,.28/.26mmDP)	\$445/529
Mag DJ530 15" N/(1280x1024,.28mmDP)	\$288.00
Mag DJ700T 17" N/L(1280x1024,.25mm Trinitron)	\$605.00
NEC A500/A700 .28mmDP DotTrio	\$315/600
NEC E500/E700 .25mmDP Cromaclear	\$390/760
NEC E900 19" Microfilter	\$110.00
Panasonic S50/S70 15"/17" (1280x1024,.27mmDP)	\$290/535
Panasonic PF70 17" FS(1280x1024,.24mmDP)	\$950.00
Panasonic S110 21" (1600x1200,.25mmDP)	\$1425.00
Provieu 14" N/L/R(1024x768,.28mmDP)	\$170.00

Pentium II - Personal

Intel Pentium II Processor with Fan
Pentium II 440LX AGP/PCI/ISA ATX Main Board
 Internal L2 Cache
 32MB 168 Pin High Performance SDRAM
 1.44MB Floppy Drive
 3.2GB Ultra DMA33 IDE Hard Drive
 Ultra DMA33 Cont. w/2x16550 Serial
 1xBi-Directional Parallel
 AGP Cirrus Logic 5465 3D Accelerator/w 4MB RAMBUS
 Acer AW300 64-Voice Wavetable Sound Card
 32x Speed UDMA CD-ROM, 80W Speaker
 15" Non-Int Low Rad. SVGA Monitor PnP
ATX Mid-Tower Case with CSA Power Supply
 104-keys Windows 95 Keyboard,PS/2 Mouse
 2 Year Parts & Service Warranty



233MHz w/512KB L2 \$1,105
266MHz w/512KB L2 \$1,155
300MHz w/512KB L2 \$1,295
333MHz w/512KB L2 \$1,490

IDE Hard Drive Special !!

	6.4GB
ULTRA DMA2.1GB	\$178
IDE 3.2GB	\$193
IDE 4.3GB	\$215

IDE
 HAND
 DRIVE

Creative Labs

DVD ENCORE

Dxr2 Kit

PRICE CUT

PC DVD

ENCORE

Dxr2

After \$30 mail-in rebate

Celeron - Power Station

Intel Celeron Processor with Fan

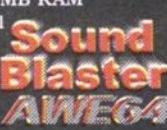
1440LX AGP/PCI/ISA ATX Main Board
 32MB 168 Pin High Performance SDRAM
 1.44MB Floppy Drive
 3.2GB Ultra DMA33 IDE Hard Drive
 Ultra DMA33 Cont. w/2x16550 Serial
 1xBi-Directional Parallel
 AGP Trident 9750 3DImage Card/w 4MB
 Acer AW300 64-Voice Wavetable Sound Card
 32x Speed UDMA CD-ROM, 80W Speaker
 15" Non-Int Low Rad. SVGA Monitor PnP
ATX Mid-Tower Case with CSA Power Supply
 104-keys Windows 95 Keyboard,PS/2 Mouse
 2 Year Parts & Service Warranty



Celeron 266MHz MMX.. \$ 995
Celeron 300MHz MMX.. \$ 1,090

Triton TX 3D Station Plus

Features:
 Intel Pentium Processor with Fan (support up to 233MHz MMX)
 Triton 430TX PCI/ISA Main Board w/512KB Pipeline Cache
 32MB 168 Pin High Performance SDRAM exp. to 256MB
 1.44MB Floppy Drive
 3.2GB UltraDMA-33 IDE Hard Drive
 2x Ultra DMA Bus Master IDE Controller
 PCI ATI Xpert XL Rage pro 3D Accelerator w/ 4MB RAM
 2x16550 UART Serial, 1 Bi-Directional Parallel
 15" Non-Int SVGA Monitor .28mm dp
 15" Tower Case with 200W CSA Power Supply
 104-keys Win95 Keyboard
 3 Button MS Compatible Mouse
 Creative Labs Sound Blaster AWE64 Card
 32x Speed UDMA CD-ROM, 80W Speakers (P.M.P.O.)
 2 Year Parts & Service Warranty



PENTIUM

233MMX.....\$ 1,050

Superior Station

Features:

AMD-K6 K6-2 3D Processor w/ 64KB L1 cache
 VIA Apollo VP3 AGP/PCI/ISA Board w/512KB Pipeline Cache
 32MB 168 Pin High Performance SDRAM exp. to 512MB
 1.44MB Floppy Drive
 3.2GB Ultra DMA-33 IDE Hard Drive
 AGP Trident 9750 3DImage 3D Card w/ 4MB SDRAM
 Ultra DMA IDE Controller
 2 x 16550 Serial, 1 Parallel & 1 Game Port
 15" Non-Int SVGA Monitor .28mm dp PnP
 15" Mid-Tower Case with CSA Power Supply
 104-keys Win95 Keyboard, 3 Button Mouse
 PCI Acer AW300 64-Voice Wavetable Sound Card
 32x Speed UDMA CD-ROM, 80W Speaker (PMPO)
 2 Year Parts & Service Warranty

A

3D



AMD-K6 MMX

K6-233MMX	\$ 920
K6-266MMX	\$ 965
K6-300MMX	\$ 1,020
K6-2 3D 300	\$ 1,115

Modem & Mice

33.6Kbps S/R Int. Fax Modem w/voice	\$ 41.50
56Kbps K56/V.90 Flex Int. Modem w/voice	\$ 75.00
Diamond SupraExpress 56K v.90 Int. Voice	\$ 140.00
Diamond SupraSonic II Shortgun v.90 Voice	\$ 279.00
US Robotics Sportster ISDN 128K Int.	\$ 268.00
US Robotics 33.6 Int. Fax Modem	\$ 99.00
US Robotics 33.6V Int. Modem(Full Duplex)	\$ 108.00
US Robotics x2 56K Int. Fax Modem	\$ 115.00
US Robotics 56K v.90 Int/Ext Fax Modem	\$ 150/205
US Robotice 56K v.90 Int/Ext Voice Modem	\$ 168/275
US Robotics Big Picture TV Phone Camera	\$ 599.00
Genius NetMouse with Magic-Button	\$ 12.00
Logitech Mouseman/FirstMouse+ OEM	\$ 23/28
Microsoft J Mouse/IntelliMouse	\$ 35/48
Microsoft Comp. Mouse	\$ 7.00

Printers

Canon BJ-250 Color Inkjet	\$ 168.00
Canon BJC-4300/4400 Color Inkjet	\$ 257/276
Canon BJ-C5500/7000 Color Inkjet	\$ 425/495
Brother HL730/760DX Laser Printer 600dpi	\$ 455/570
Epson Stylus 400 Color Inkjet 720dpi	\$ 225.00
Epson Stylus 600/800 Color Inkjet 1440dpi	\$ 285/430
Epson Stylus Photo 700 Color Inkjet 1440dpi	\$ 395.00
Epson Stylus Photo 850/850N Color Inkjet 1440dpi	\$ 537/775
HP 692/722C Deskjet Color Printer	\$ 319/420
HP 890Cxj Deskjet Color Printer	\$ 555.00
HP 1120Cxj/2000C Deskjet Color Printer	\$ 680/1145
HP 4000 LaserJet 1200 dpi 17PPM	\$ 1560.00
HP 6L LaserJet, 600 dpi 6 PPM	\$ 549.00
HP 6P/6MP Laserjet, 600 dpi 8 PPM	\$ 1020/1280
Raven PR-2405 24-pin, 192 cps	\$ 230.00

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102 - 1245 West Broadway
 Vancouver, B.C. V6H 1G7



COMPAQ



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**Networking
Partner**

digital

**Intel
Processor
Dealer**



Pentium II - MediaMax Pro

Intel Pentium II Processor with MMX Technology

Asus 440BX AGP/PCI/ISA ATX Main Board (Asus P2B)

Internal L2 Cache

64MB 168 Pin High Performance SDRAM (PC100MHz)
expandable to 384MB

1.44MB Floppy Drive

6.4GB Ultra DMA33 IDE Hard Drive

Ultra DMA33 Cont. w/2x16550 Serial, 1xBi-Directional Parallel

AGP i740 3D Accelerator Card with 8MB SDRAM

Creative Labs Sound Blaster AWE 64 Card, 100W Speakers(PMOP)

36x Speed UDMA CD-ROM

Acer 17" .27mm Dot Pitch Non-Int SVGA Monitor

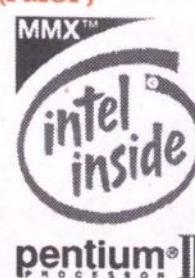
ATX Mid-Tower Case with CSA Power Supply

104-keys Windows 95 Keyboard, PS/2 Mouse

2 Year Parts & Service Warranty

350MHz w/512KB L2 \$2,250

400MHz w/512KB L2 \$2,540



pentium® II

Monthly Special !! Big Saving!!!

SIMM Memory

16MB 60ns 72-Pin EDO SIMM	\$20.50
32MB 60ns 72-Pin EDO SIMM	\$39.50
32MB 168-Pin SDRAM	\$40.50
64MB 168-Pin SDRAM	\$105.00
128MB 168-Pin SDRAM	\$205.00
64MB SDRAM PC-100 compliant	\$128.00
128MB SDRAM PC-100 compliant	\$250.00
64MB ECC SDRAM PC-100	\$169.00
128MB ECC SDRAM PC-100	\$318.00
4MB 70ns 30-Pin SIMM	\$10.00

Iomega Zip

100MB Zip Cartridge	\$13.95
organize, move & Backup your Stuff	

Maxell/BASE

74Min/650MB CD-R	Recordable
BASF - \$1.75	

Maxell - \$1.95

Cirrus Logic

33.6K bps Internal Voice Fax Modem	\$41.50
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3M Imation

TR-3 3.2GB Travan Mini Cartridge	\$26.99
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MICROCONCEPT NETWORK PRODUCTS FOR LESS !!

NOVELL Software

Novell 3.2 5 user

\$1100.00



NetWare v3.2

NetWare v3.2 5/10 User	\$1100/2520
NetWare v3.2 25/50 User	\$3730/5040
NetWare v3.2 100/250 User	\$7060/12620
NetWare v3.2 Enhancement Pack	\$355

IntraNetWare v4.11

IntraNetWare v4.11 5/10 User	\$1100/2100
IntraNetWare v4.11 25/50 User	\$3730/5040
IntraNetWare v4.11 100/250 User	\$7060/12620
IntraNetWare v4.11 500/1000 User	\$25200/48400
IntraNetWare v4.11 Manuals	\$505

MICROSOFT NT

Microsoft Windows NT Server	
Microsoft Windows NT Workstation	
Windows NT Server v4.0 CD w/5 Clients Lic.	\$1050
Windows NT Server v4.0 CD w/10 Clients Lic.	\$1470
Windows NT v4.0 Client Access Lic.	\$47
Windows NT Server v4.0 upgrade w/5 Clients Lic.	\$535
Windows NT Server v4.0 upgrade w/10 Clients Lic.	\$700
Windows NT Workstation 4.0 CD	\$399
Windows NT Workstation 4.0 upgrade	\$199
BackOffice Small Business Server v4.0 w/5 Clients	\$1990
BackOffice Small Business Server v4.0 w/25 Clients	\$3280
Microsoft SMS version 1.2 w/10 Clients Lic.	\$1465
Microsoft SMS version 1.2 w/25 Clients Lic.	\$2350
Microsoft SMS version 3.0 w/5 Clients Lic.	\$1725

Network Printers



Optra S1255
1200dpi, 4MB
\$1380.00



June 10, 1997

HP 4000N Laserjet, 1200 dpi, 8MB	\$2000
HP 4000TN Laserjet, 1200 dpi, 17ppm, 8MB	\$2270
HP 5000 Laserjet, 1200dpi, 16ppm, 11x17"	\$2100
HP 5000N Laserjet, 1200dpi, 16ppm, 11x17", Network	\$2900
HP 5000GN Laserjet, 1200dpi, Graphics intensive	\$3750
HP 8000 Laserjet, 1200dpi, 24ppm	\$3460
HP 8000N Laserjet, 1200dpi, 24ppm, Network	\$3870
HP 8000DN Laserjet, 1200dpi, 24ppm, Duplexer	\$4590
Lexmark Optra S 1255, 12ppm, 4MB	\$1380
Lexmark Optra S 1255N, 12ppm, 4MB, 10/100BaseTx	\$1790
Lexmark Optra S 1625N, 16ppm, 4MB	\$1450
Lexmark Optra S 1625N, 16ppm, 4MB, 10/100BaseTx	\$1865
Lexmark Optra S 1855, 18ppm, 4MB	\$1615
Lexmark Optra S 1855N, 18ppm, 8MB, 10/100BaseTx	\$2080
Lexmark Optra S 1855, 18ppm, 4MB	\$1830
Lexmark Optra S 1855N, 18ppm, 8MB, 10/100BaseTx	\$2300
Lexmark Optra S 2455, 24ppm, 8MB	\$3005
Lexmark Optra S2455N, 24ppm, 16MB, 10/100BaseTx	\$3400
Lexmark Optra SC 1275N, 3ppm, 16MB	\$4500
Lexmark Optra SC 1275N, 3ppm, 32MB	\$5250

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Tech: (604) 738-8738

Store Hours:
Mon-Fri 09:30am - 6:30pm
Sat 10:00am - 5:00pm
Sun Closed



<http://www.mconcept.com>

Ethernet Coax / Combo Adapters

3COM 3C509B ISA Ethernet III Combo	\$150
3COM 3C900 PCI Ethernet XL Combo	\$170
D-Link DE-220PCT ISA Ethernet Combo	\$170
Hewlett Packard SureStore 8GB Int/Ext DAT Drive	\$1245/1410
Hewlett Packard SureStore 24GB Int/Ext DAT Drive	\$1765/1945
Seagate 2GB 4mm DAT Int/Ext SCSI Drive	\$870/1030
Seagate 4GB 4mm DAT Int/Ext SCSI Drive	\$870/1050
Seagate 8GB 4mm DAT Int/Ext SCSI Drive	\$1030/1210
Seagate 24GB 4mm DAT Int/Ext SCSI Drive	\$1445/1695
Seagate SideWinder AIT 50GB Int/Ext SCSI Drive	\$3760/4280
Sony SDT-5000 Int/Ext 4-8GB DAT	\$1200/1430
Sony SDT-7000 Int/Ext 4-8GB DAT	\$1285/1525
Sony SDT-9000 Int/Ext 24GB DAT	\$1670/1880

Print Servers

HP JetDirect J2550B RJ45	\$430
HP JetDirect J2552B RJ45/BNC/LocalTalk	\$500
HP JetDirect J2556B Fast Ethernet	\$559
HP JetDirect J2592A 150X RJ45	\$235
HP JetDirect EX Plus J2593A RJ45/BNC	\$325
HP JetDirect EX Plus J2593A RJ45/BNC	\$465
HP JetDirect J3110A 600N RJ45	\$350
HP JetDirect J3111A 600N RJ45/BNC	\$410
Intel NetportExpress Pro Ext. Printer Server PCA2151	\$550
Intel NetportExpress Pro Int. Printer Server PCA3151	\$390
Intel NetportExpress Pro/100 Ext. Printer Server 1 Port	\$390
Intel NetportExpress Pro/100 Ext. Printer Server 3 Port	\$550

10 BaseT Adapters

3COM 3C509B ISA Ethernet III TPO	\$79
3COM 3C900 PCI Ethernet XL TPO	\$78
D-Link DE-220PT ISA Ethernet 10BaseT	\$33
D-Link DE-530T+ PCI Ethernet 10BaseT	\$48
Intel PCA8220B ISA EtherExpress Pro 10+ 10BaseT	\$77
Intel PCA8225B ISA EtherExpress Pro 10+/Flash RJ45	\$94
Intel PILA8520 PCI EtherExpress Pro 10+ 10BaseT	\$113
SMC 1660T ISA 10BaseT	\$35
SMC 1208T PCI EzCard 10BaseT	\$34
SMC 8416T ISA EtherEZ 10BaseT	\$80
SMC 8432T PCI EtherPower 10BaseT	\$72

Switches

3COM 3C16730 OfficeConnect Switch 4 10BT/1 100BT-X	\$575
3COM 3C16732 OfficeConnect Switch 8 10BT/2 100BT-X	\$865
3COM 3C16951 SuperStack II 10 Switch 1100 12 Port	\$145
3COM 3C16950 SuperStack II 10 Switch 1100 24 Port	\$2030
3COM 3C16981 SuperStack II 100 Switch 3300 12 Port	\$2435
3COM 3C16980 SuperStack II 100 Switch 3300 24 Port	\$3650
Intel InBusiness SH1078 Switch 8 10BT	\$715
Intel InBusiness SH110TX8 Switch 8 10BT/2 100BT-X	\$1035

100 Mbps Systems

3COM 3C905 TX PCI	</

OKIDATA**Okipage 4W**

\$285

- True 600 x 600 dpi
- 4 pages per minute
- 1 yr overnight exchange
- Ultra compact size
- Windows 95/3.11 comp.

Oki Office 44

FAX/PRINTER/COPIER/SCANNER



\$718

- Toner-based LED Printer - 600dpi class
- Stand-alone Fax - fast 14.4kbps fax modem
- Desktop/Personal Copier - up to 4 copy/min
- Document Scanner - includes OCR software
- Windows 95 Plug and Play

Microline

DOT-MATRIX

OKIDATA Printer



Model N/W	CPS	Pin	Price
ML184	300	9	\$355
ML320/321	435	9	\$485/670
ML520/521	435	9	\$580/780
ML390/391	390	24	\$505/675
ML395/Color 607	24		\$1510/1620
ML590/591	360	24	\$675/970

Acer

TOP 10

PLATZ 6

Anzeige der 100

Acer 96

PC WELT

76e 17" Flat Square

76mmDP
(Max res. 1280x1024)

\$415

PC WORLD

TOP 10

MONITORS

79g 17".25mmDP

Diamondtron

(Max res. 1600x1200)

\$575

EYE-POPPING QUALITY & PRICE-GUARANTEED.

ADI MicroScan 6P 19"



Ultra-high resolutions up to 1280x1024 at 85Hz or 1600x1200 at 75Hz refresh rates with super fine trio dot pitch of 0.26mm

\$845

Canon

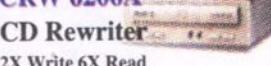
BJC-250 Inkjet Printer



\$168

Acer

CRW 6206A



\$469

Tekram

Ultra Wide SCSI Card

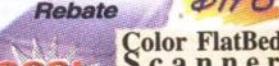


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- 40MB/sec Max. Transfer Rate
- Up To 15 SCSI Devices
- Support CD-R, Zip & More!

UMAX ASTRA 610S

US\$20 Mail-In Rebate



\$178

- Color FlatBed Scanner
- 30 Bits Color
- Max. 4800x4800dpi
- Optical 300x600 dpi

PROVIEW PV - 1995 S

With an active display area of 18" (diagonal), a maximum resolution up to 1600x1200, and a dot pitch of 0.26mm, this flat square OSD colour monitor surely provides graphics images which are more complete and comfortable to view.

\$699

19"

3Com

3C16700 OfficeConnect

10BaseT 8 Port Hub

The Ethernet Network Hub You Can Install in Less Than 10 Minutes

\$113

SupraMax

V.90



\$84

Acer

3D



\$49

- ESS Maestro-2 PCI Audio Processor
- 64-Voice Wavetable Synthesizer
- Support Games With A3D

Mustek

\$30 Mail-In Rebate



8109

- True 30 Bits Color
- Parallel Port Interface
- Optical 300 x 600 dpi

Disco Storage**Seagate****BARRACUDA****Quantum****Western Digital**

Capacity Model Access Cache RPM Interface Price

4.5GB	ST34572N	9ms	512K	7200	ULTRA SCSI	\$715
4.5GB	ST34572W	9ms	512K	7200	ULTRA WIDE	\$755
4.5GB	ST34573N	7.5ms	512K	7200	ULTRA SCSI	\$780
4.5GB	ST34573W	7.5ms	512K	7200	ULTRA WIDE	\$790
4.5GB	ST34501N	7.5ms	512K	10000	ULTRA SCSI	\$820
4.5GB	ST34501W	7.5ms	512K	10000	ULTRA WIDE	\$860
9.1GB	ST39173N	8ms	512K	7200	ULTRA SCSI	\$1025
9.1GB	ST39173W	8ms	512K	7200	ULTRA WIDE	\$1035
9.1GB	ST39173LC	7.5ms	512K	7200	ULTRA 2 SCSI	\$1065
9.1GB	ST39102LC	6ms	1MB	10000	ULTRA 2 SCSI	\$1250
9GB	ST19101N	8ms	512K	10000	ULTRA SCSI	\$1220
9GB	ST19101W	8ms	512K	10000	ULTRA WIDE	\$1260
18.2GB	ST118273N	8ms	512K	7200	ULTRA SCSI	\$1880
18.2GB	ST118273W	8ms	512K	7200	ULTRA WIDE	\$1890
18.2GB	ST118202LW	6.7ms	1MB	10000	ULTRA 2 SCSI	\$2230
4.3GB	WD4360-0003	8ms	512K	7200	ULTRA SCSI	\$600
4.3GB	WD4360-0007	8ms	512K	7200	ULTRA WIDE	\$620
9.1GB	WD9100-0003	8ms	512K	7200	ULTRA SCSI	\$980
9.1GB	WD9100-0007	8ms	512K	7200	ULTRA WIDE	\$1020
3.2GB	QM33200SE	10ms	128K	5400	ULTRA SCSI-3	\$355
4.3GB	QM34300SE	10ms	128K	5400	ULTRA SCSI-3	\$405
6.4GB	QM36400SE	10ms	128K	5400	ULTRA SCSI-3	\$540
8.4GB	QM38400SE	10ms	128K	5400	ULTRA SCSI-3	\$690

DIAMOND

MASSIVE 3D POWER!!

Using the next generation 3Dfx Voodoo2 chipset, Diamond Monster 3D II blows away every previous standard of performance - with up to three times the power and realism of our award-winning original Monster 3D.

\$305/335

OEM Pack

Retail Pack

\$150

After mail-in rebate

Killer 3D for your PC!

Based on the on 3Dfx Voodoo Graphics chipset, Monster 3D sets the new standard for affordable real-time full-screen 3D rendering on personal computer.

Stealth II

Record-Breaking Graphics! Stealth II 460 - Incredible Performance for \$125 Get the most for your money with Stealth II, a complete entertainment and business multimedia accelerator.

Viper

Viper - True 128-Bit Power (PCI version) Viper's true 128-bit processing sets new performance standards for 3D gaming, Windows business graphics and smooth video playback.

\$125/185

OEM Pack

Retail Pack

\$125/180

OEM Pack

Retail Pack

\$235/270

OEM OEM PCI AGP

Fire GL 1000 Pro - Performance (8MB)

Four times faster than its competition, Fire GL 1000 Pro allows you to conquer graphics-intensive 3D and 2D applications with maximized resolutions, speed and power.

ALTEC LANSING

MULTIMEDIA

ACS43W PowerCube Speaker (2 pcs)	\$45.00
ACS45W Powercube Speaker (3 pcs)	\$90.00
ACS48 PowerCube Plus Speaker (3 pcs)	\$190.00
AC55 Shielded Computer Speaker	\$105.00
AC55 Power Gaming Speaker w/Dolby Surround	\$236.00
AC5160 Power 6.5" Subwoofer upgrade	\$120.00
ADA305 Digital PowerCube Speaker w/MultiChannel Surround	\$225.00
AC5425 Pro Logic Speaker (3 pcs)	\$210.00
AC5500 5 Channel Dolby Surround Sound Speaker	

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THE WAY YOUR COMPUTER SHOULD SOUND.

YST-M7 5 Watts/ch Multimedia Speaker (2 pcs)	\$57.00
YST-M15 10 Watts/ch Multimedia Speaker (2 pcs)	\$82.00
YST-MS10 Active Subwoofer System	\$122.00
YST-M20 10 Watts/ch Multimedia Speaker w/DSP	\$100.00
YST-MS25 Multimedia Speaker & Subwoofer (3 pcs)	\$103.00
YST-MS100 Multimedia Speaker & Subwoofer w/DSP	\$183.00

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audiophiles

MicroWorks

music lovers/gamers

SoundWorks

value shoppers

PC Works

SoundWorks Amplified Speaker & Subwoofer

MicroWorks Powerful Amplified Speaker & Subwoofer

\$345.00

COMPAQ**Jaz 1GB SCSI External Drive**

only \$415

Get 1GB Storage for only \$13.95

Get 1GB Storage for only \$119

Get 2GB Storage for only \$165

Jaz 2GB SCSI External Drive

Acer

Extensa 367D

Intel Pentium 200MHz MMX
32MB Memory
2.1GB Hard Drive
20X CD-ROM
12.1" DSTN Display
Integrated 56Kbps fax modem
Built-in Sound System
Universal Serial Bus Port



SCEPTRE

Sceptre 3920

Intel Pentium 150MHz MMX
256KB L2 Cache Memory
16MB EDO Memory
2.1GB Hard Drive
10X CD-ROM
Built-in Mic & 16-bit Sound
11.3" DSTN Display
FREE carrying case included!

COMPAQ Armada

Model	CPU	RAM	HDD	CD	Display	Price
367D	200mmx	32MB	2.1GB	20X	12.1 DSTN	\$1,925
367T	200mmx	32MB	2.1GB	20X	12.1 TFT	\$2,480
393C	166mmx	32MB	2.1GB	20X	12.1 DSTN	\$1,760
710DX	PII233	32MB	2GB	24X	12.1 DSTN	\$2,990
710T	PII233	32MB	3GB	24X	12.1 TFT	\$3,580
710TE	PII233	32MB	4GB	24X	13.3 TFT	\$4,030



ThinkPad

Model	CPU	RAM	HDD	CD	Display	Price
310ED	166mmx	32MB	2.1GB	12.1 DSTN	\$1,940	
380ED	166mmx	16MB	5.1GB	20X	12.1 TFT	\$3,360
380XD	233mmx	32MB	3.2GB	24X	12.1 HPA	\$3,000
380XD	233mmx	32MB	4.0GB	24X	12.1 TFT	\$3,850
380XD	266mmx	32MB	5.1GB	24X	12.1 TFT	\$4,430
380XD PII233	32MB	4.0GB	24X	12.1 HPA	\$3,875	
380XD PII266	32MB	5.1GB	24X	12.1 TFT	\$5,400	
560X	233mmx	32MB	4.0GB	12.1 TFT	\$4,425	
600	233mmx	32MB	3.2GB	24X	13.1 HPA	\$4,195
600	PII233	32MB	3.2GB	24X	13.1 TFT	\$5,540
600	PII266	32MB	4.0GB	24X	13.1 TFT	\$6,365
770E	PII266	32MB	5.1GB	14.1 TFT	\$6,230	
770ED PII266	64MB	8.1GB	14.1 TFT		\$8,030	

PCMCIA / PC Cards

Adaptec APA-1450B SlimSCSI Kit	\$135.00
Adaptec APA-1460B SlimSCSI Kit	\$245.00
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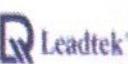
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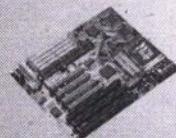
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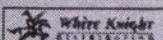
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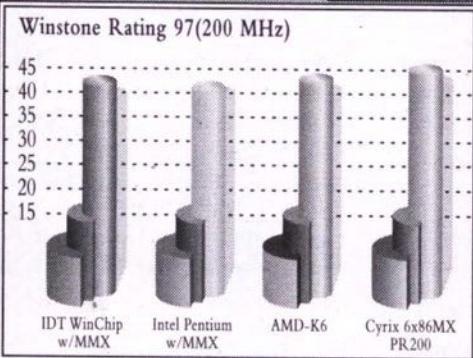
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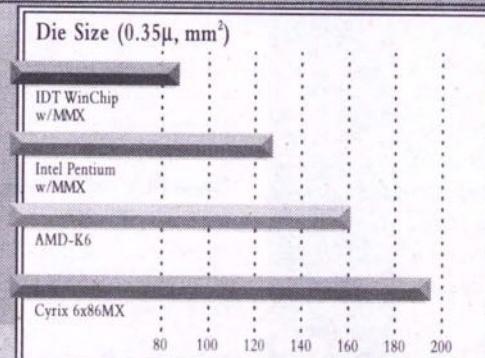
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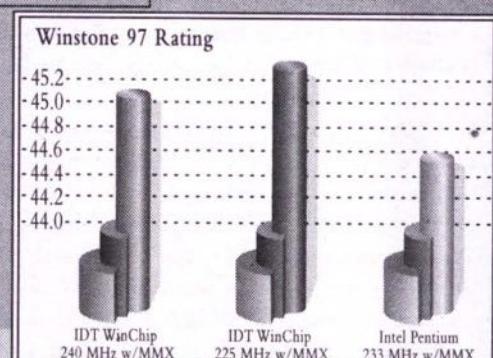
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Encryption on the desktop*Continued from page 14*

the 1970s and works by using two keys—a public key, which anyone can access, and a private key, which you keep secret. Messages are encrypted with the public key, and the resulting mess can only be decrypted with the private key.

The RSA encryption engine is patented and owned by RSA Data Securities Inc., and can be found in numerous software products, including Windows, Netscape Navigator, Intuit's Quicken, and Lotus Notes.

NYEO also uses a type of encryption called symmetric key encryption. Symmetric key encryption uses the same key to scramble and unscramble data. This is a very secure and well-understood encryption scheme, which works well when data does not need to be shared. However, when you send someone data secured by a symmetrical key you must also get the key to them. Whether you call, email or fax the key, the fact is your data is no longer secure. For this reason email is usually

coded with a public key system.

There is one draw back to public key systems as well. The person wanting to send you information must first get your public key. They can do so by asking you for it (many people include their public key at the bottom of their email) or by visiting a Web site that keeps a list of such keys. Again there is a small problem: because there is more than one company selling public key programs, there is more than one public key list.

As well as these types of encryption NYEO offers Triple DES, RC5 and Blowfish if desired (Canadian/U.S. version only). The program will encrypt files individually if you like or whole folders. The program defaults to a boot protection password as well. If you start your computer you must enter a password to proceed. Boot from a disk? No luck, the program is prepared for that. You can also make your screen saver password protected.

You can also set up NYEO for multiple users, so that each user can encrypt their files without being able to encrypt yours. New to

this version of NYEO is support for Windows NT 4.0. The product works with NT's existing security and performs all the functions mentioned above.

All in all, this is a very competent product with a good interface and a well-rounded set of features.

Jaws L5 Data Encryption

From: Jaws Technologies Inc.
380-603 7th Ave. SW, Calgary, AB T2P 2T5
Tel: 888-301-JAWS
<http://www.jawstech.com>
ESP: \$49.95

A little company with big teeth, Jaws Technologies is betting US\$5 million that nobody can break its strongest code! On June 18, Jaws issued its challenge to bring attention to its L5 Data Encryption products. Jaws L5 Standard uses 128-bit encryption.

The company plans to sell this program via its Web page and Internet software retailers. The \$49.95 Jaws L5 Professional uses a 4,096-bit key, which if exported, would shut down the company. The 4096-bit design means that the number of possible permutations of the code (a number so high, says Jaws Technologies Inc., it doesn't have a name) has a grand total of 411 commas if written numerically.

Jaws L5 uses a series of methods to scramble your data. It offers the highest bit level of any commercial product, and the company augments its program with public key encryption and state-of-the-art random seed number generation.

Jaws has a number of interesting pointers to help you keep your data safe. It suggests you use a key that is a minimum of 10 characters in length. This is because your password is used to create a larger key. If the password, or first key, is short it limits the complexity of the larger key. The company also suggests you use a non-standard number (not a letter or a number) in the password. Lastly, it recommends you do not use any words that are in the dictionary.

Jaws L5 is a Spartan and clean utility with few buttons and no learning curve. Simply click on a file or group of files in the explorer-style window, enter a password and it is done. The process is quick. Decrypting is equally easy, but takes a few seconds longer.

If you want to encrypt your data so that even the CSIS can't read it, get Jaws L5 Professional.

Blowfish Advanced 97

From: Markus Hanh
Schellingstr. 13, 72622 Nuertingen, Germany
Web: www.shareit.com
Price: US\$20

This product may or may not be available at the time you read this. The program is only available via the Web, but its location on the Web seems to change. A poll of various search engines turns up reviews, sales information, and download links—most of which are dead.

The reason why it is so hard to locate was clear once we finally got a copy of the software. It seems to offer a level encryption forbidden by U.S. export laws. German businesses are not bound by these regulations, but U.S. ISPs are, and this seems to be why links to this product on three different Web pages didn't work.

The trial copy is, in fact, limited to five characters (40 bits), which makes it weak enough for export (or re-export in this case) from the U.S. However, with registration, a

user receives a key to unlock the program's full capability.

Blowfish Advanced 97 uses a number of encryption schemes in a two-layer approach. The primary encryption engine is based on Blowfish, which was developed in 1993 by Bruce Schneier. Blowfish is a symmetric cipher that takes a variable-length key, from 32 bits to 448 bits. Since 1993, the system has been gaining acceptance. The Blowfish encryption engine is not patented and thus is available for use in any product including this one. Blowfish comes in four different forms and you will often see it listed as an option in many encryption programs. NYEO, for example, lists Blowfish as a choice.

Blowfish 97 is simple and easy to understand. The toolbar uses icons only; there are no words. The help system is clear. Selecting a file and clicking on the lock icon brings up a message informing the user that the encryption being used is restricted to five characters but that 32,000 character encryption is available once they have registered. Entering a password encrypts the file in a matter of seconds. The filename has a new extension appended (.BFA), which is the operating system's cue to start Blowfish Advanced when such a file is executed. That's all there is to this tidy little program.

There is also a Windows 95/NT encryption program on the Web which uses the Blowfish engine. EnClib 5.1 uses Blowfish CDC and ECB modes to encrypt data. The product however cannot be downloaded from the Web and may only be shipped to U.S. addresses.

PGP for Personal Privacy 5.5 for Windows 95/NT 4.0

From: Network Associates Inc.
201-139 Main St., Unionville, ON L3R 2G6
Tel: 905-479-4189
<http://www.nai.com>
Estimated street price: \$59.95

Pretty Good Privacy is a public key encryption standard that has been around for a number of years and is well used. PGP for Personal Privacy is in version 5.5 and runs on Windows 95 and NT 4.0. (Macintosh versions are also available.)

PGP is primarily an email encryption program, although you can use it to secure regular files on your hard drive. One of the best things about PGP is that there are a number of plug-ins for popular email programs such as Eudora, Netscape and Outlook. The plug-ins customize the software for those programs and add little touches such as an extra toolbar button. The PGP tray icon, floating toolbox and right-click menu selections are all very well designed. You can tell this program has been around for a while.

Once you have generated a private key you can connect to the PGP server and make your public key available so people can encrypt messages to you. If you have a mainstream email program, encrypting and decrypting is as simple as clicking a button. If you have some other program, it is still possible to encrypt messages by copying them to the clipboard and telling PGP to encrypt the clipboard. You copy the message back to your email program and send it.

PGP is particularly smart about sending encrypted information to Mac users. The new version's Smart Binary option makes the transfer of encrypted messages from Mac to Windows (and back again) smoother.

You may have seen PGP encryption in a program called Nuts & Bolts from Helix. Continued on page 28

IF YOU STORE CONFIDENTIAL INFORMATION ON YOUR COMPUTER AND IT IS NOT ENCRYPTED, YOU ARE AT RISK OF LOSING IT

A survey of 1700 web sites revealed that over 60% of online sites could be broken into or destroyed (Dan Farmer, December 18, 1996). If you are an owner or customer of any one of these web sites, the opportunities for your valuable personal and business information to fall into the hands of unauthorized users are unlimited.

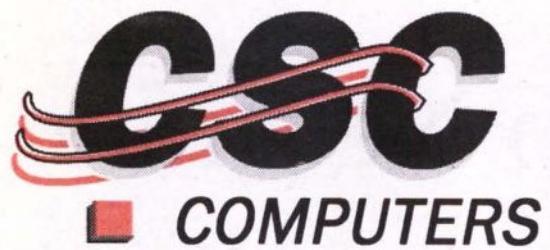
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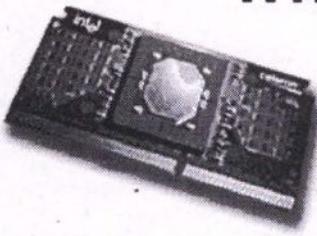
"We wanted 4096 bit encryption on our Internet transactions and client files so that our customers have no concerns whatsoever about doing business on the Internet."

Scott Martin, President, FutureServe

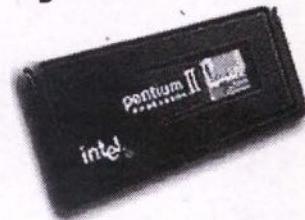
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Canadian firms vulnerable to Net fraud

By Martin Stone

TORONTO (NB)—A survey conducted by one of the world's largest security firms has disclosed that, despite concerns among business leaders that the Internet is not a secure way to send information, it is still widely used by Canadian companies to do just that.

According to security and investigation organization KPMG's 7th annual *Canadian Fraud Survey Report*, which polls the chief executives of Canada's top 1,000 companies on fraud and corporate security, only 11 percent of respondents believe that the Internet is a secure way to send information.

However, the study shows 43 percent stated their company uses the Internet to transmit sensitive or private information, anyway.

"I think where the worry comes in is, as more companies move to an electronic-based economy they need to be more concerned about the security of their Internet transactions," KPMG Investigation and Security Inc. president Norm Inkster said.

"The Internet is a very easy and convenient way to conduct business and send information. People are busy and electronic commerce and mail appeals to them because it's fast and saves time," Inkster continued. "However, the Internet presents risks for fraud if companies do not implement adequate information security measures. The increase in electronic commerce provides opportunity for fraud in all industries."

For the first time in its seven-year history, KPMG's fraud survey asked about the security measures for computers and the transmittal of information by Canada's largest companies. Inkster points to warning signs from the results that indicate that Canadian businesses are vulnerable to fraud through the Internet.

"I believe that business leaders are putting their companies at risk," he said. "Eighty-two percent of respondents consider their computer systems to be a potential security risk for fraud. But less than half reported using security measures when transmitting information over the phones or Internet."

Inkster said that many companies don't realize that when you are hooked up to the Internet, the Internet is hooked up to you. "It's a two-way street," he said, "and you need adequate firewall protection."

sophisticated, the source appears to be the same as recorded by KPMG surveys in previous years. Overwhelmingly, the greatest single source of fraud, according to respondents, is their company's own employees. Seventy-seven percent of respondents cited their employees as the principal source of fraud. Customers were considered by respondents to be the second highest source.

The most common types of fraud perpetrated by employees included inflated expense accounts, theft, secret commissions, and per-

**Many companies don't realize that when
you are hooked up to the Internet,
the Internet is hooked up to you**

—Norman Inkster, KPMG

Another of the survey's major findings is that 57 percent of all respondents admitted that their firm had been a victim of fraud.

Also, 47 percent of respondents believe that fraud will increase in 1998. This number rose to 62 percent within the financial services sector. When asked for a reason why fraud would increase, over half of the survey participants blamed regulatory deficiencies.

However, less than five percent attributed the problem to a lack of government intervention. "One of the conclusions that I think we can draw from these results is that many business leaders blame the increase in fraud on the lack of self-regulation in their industries," Inkster concluded. "They don't want government regulation, but they recognize the need to take responsibility for fraud prevention."

While fraud techniques may be more

personal use of company supplies. Customer-related fraud is predominantly committed through check-forgery, credit card schemes, automatic teller machine fraud, missstated accounts, and withholding cash receipts.

The sectors where fraud had the greatest impact and where the level of concern is the highest are utilities, food and packaged goods, and financial services, the survey shows.

The study also queried respondents on their vulnerability to money laundering. Only 14 percent of survey participants stated they had been impacted by this illegal activity. However, almost half the firms admitted they accept forms of payment that make them vulnerable to money laundering.

Moreover, 83 percent of respondents acknowledged they do not conduct background checks on investors. Vulnerability to

money laundering was highest in the financial services sector. Fifty-nine percent of respondents from this sector believe their company is affected by international money laundering, while 56 percent accept forms of payment that make them vulnerable to money laundering.

Companies are, however, taking measures to prevent fraud among employees.

The survey reveals 98 percent of respondents state it is important to screen new employees, while 88 percent actually have pre-employment screening procedures already in place. However, only 50 percent of respondents say they ran background checks on new suppliers and contractors. Even fewer—less than 20 percent—conduct background checks on new investors or franchisees.

Other survey findings support the fact that companies should have procedures in place to prevent fraud. Most respondents report that fraud was discovered by the company through internal mechanisms such as internal audits and "whistle-blowers."

Inkster said that adequate firewall technology is available and that "there is some excellent encryption software." However, he said that many companies have not taken a hard enough look at their security arrangements and are thus vulnerable.

He suggested companies conduct a "threat-risk analysis—what their assets are, where they stored, where they are vulnerable—and build their security network around the findings."

The KPMG survey polled chief executives of Canada's top 1,000 public and private companies as ranked by the *Financial Post* newspaper. The response rate was 21 percent. □

Contact: KPMG <http://www.kpmg.ca>

Know your enemy

Frackers and crypters join crackers in creating online mischief

By Jacqueline Emigh

WELLESLEY, Mass. (NB)—Network "cracking" is taking a more malicious direction, while adding specialty areas like "fracking" and "crypting" in the process, according to a member of the new anti-cracking unit at Cambridge Technology Partners (CTP).

"Cracker" describes an individual who breaks into networks, according to Wyly Wade of CTP's Enterprise Security Systems Group, at the CTP-sponsored New Hack Tour conference. "Hacker" refers to anyone who writes program code, even an end user who scripts Microsoft Word macros, Wade said.

Emerging derivatives of "cracker" include "fracker," a person who breaks into phone networks, and "crypter," a specialist in cracking cryptographic algorithms, Wade added.

The earliest crackers engaged in the practice for "humanitarian" reasons, such as the

desire to help build better products, according to Wade. The humanitarians were joined by those who cracked networks to "further the free exchange of information."

CTP, a systems integration and software development specialist based in Cambridge, Mass., formed the new group, known as "Core," in response to customer requests. CTP

**Emerging derivatives of "cracker" include
"fracker," a person who breaks into phone
networks, and "crypter," a specialist in
cracking cryptographic algorithms**

Later on came groups like the PLO, which breaks into networks "purely for profit," and finally, people whose motives are entirely malicious.

Many of the newest breed of crackers are kids who are unaware of cracking's roots, said Wade, one of eight members of the CTP anti-cracking team.

takes a "partnering" stance with its customers, meeting whatever information technology requirements that need to be addressed, Wade said.

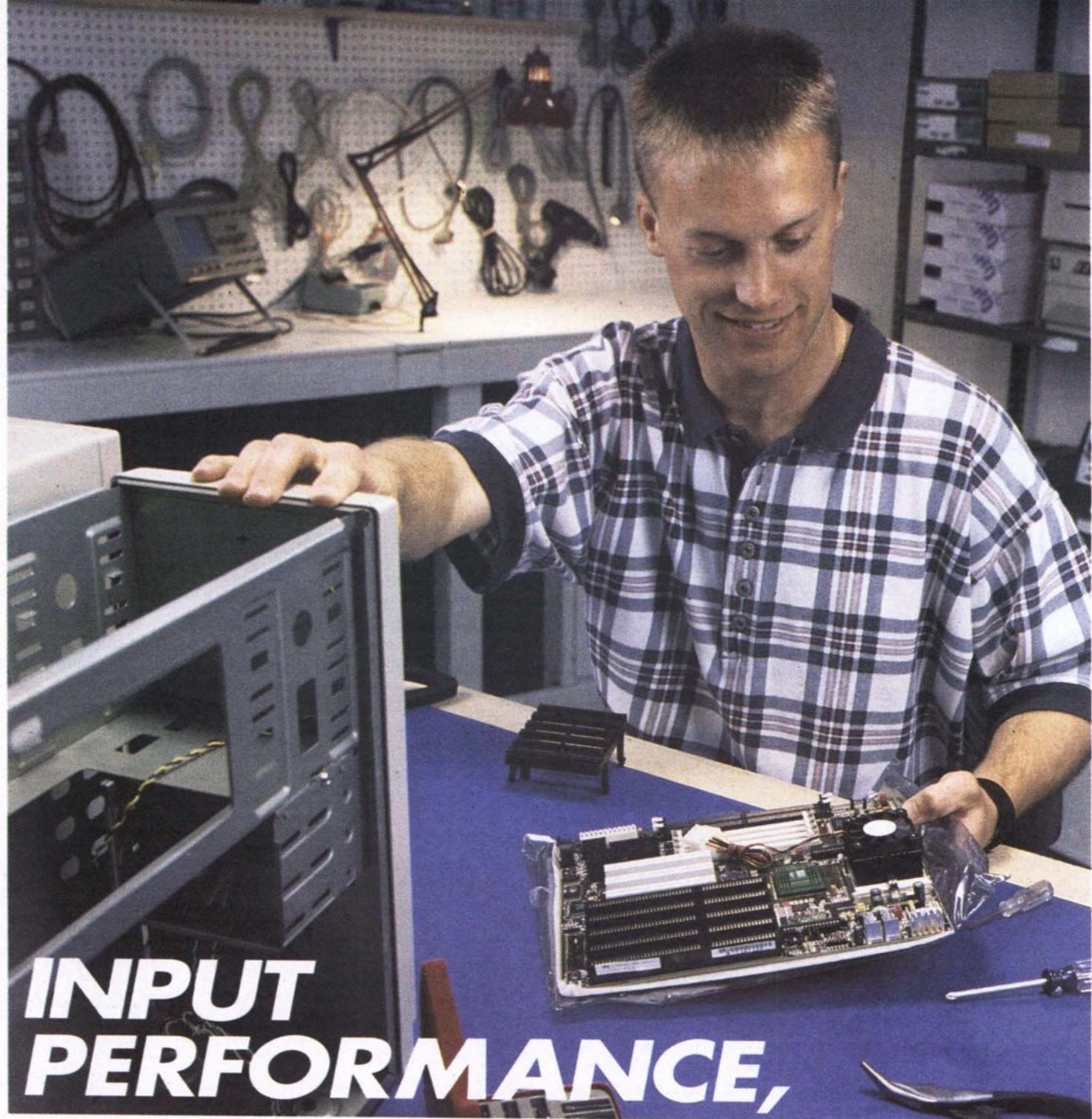
With Internet security a rising concern among customers, the Core group stays about one year ahead of the industry in keeping on top of new security threats, according to CTP.

The job is challenging, because new "incursions," or security holes, show up every day, Wade said.

A few of the more popular methods of cracking discussed at the conference included the FTP (file transfer protocol) bounce attack, protocol tunneling, and tactics such as SYN flooding, which result in "denial of service."

In an FTP bounce attack, crackers send scripts that allow them to gain access to unauthorized FTP servers. Protocol tunneling involves encapsulating, or hiding, one protocol inside of another, such as a telnet inside a ping request. Many tactics can be used to bring denial of service, including SYN flooding, ghost routing, and service loops, for instance. In this type of attack, users often don't realize a server has been hit, but instead believing it's busy, or down for repair. □

Contact: Cambridge Technology Partners <http://www.ctp.com>



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By Rod Lamirand

I was dragged out of bed early one morning and instructed to place my left thumb on the red screen. The computer made a tweet sound, the BioMouse software took a couple of scans until it got a good image, the program analyzed the unique geography of my thumb's epidermis and, finally announced ACCESS ALLOWED—my cue to go back to bed. There's a lesson in this: If you do install the BioMouse on your home machine, just remember that unless you enroll other members of your family, they will not be able to use the computer without one of your fingers.

The BioMouse, by American BioMetric Company is a Windows 3.1, 95, or NT product that allows you or to use your fingerprint to authorize access to your computer. The product works on your PC by connecting to your parallel port (there is a pass-through for your printer). While we reviewed the product on a home computer, the diminutive fingerprint scanner is intended primarily for use in government and business environments.

BioMouse

From: American BioMetrics Inc.
3429 Hawthorne Rd., Ottawa, ON K1G 4G2
Tel: 888-BIO-MOUSE
<http://www.abio.com>
Suggested retail price: \$399

When the computer is turned on, the BioMouse software allows the operating system to load and brings up a screen showing what the scanner sees. Placing the correct digit on the screen allows the program to capture your fingerprint, which it then analyses and compares against enrolled prints. (You may authorize as many users as you like by enrolling them in the program.) A successful match elicits ACCESS ALLOWED, at which time the system control is returned to the user.

Enrollment is a simple process of placing a selected digit on the scanner and allowing the program to take three images. This is necessary because the program is analyzing a number of points from the image to create a unique algorithm that must be accurate enough to be secure, yet flexible enough to allow for slight differences between scans.

In fact, you can set the level of

false acceptance. Security Level 1 has a False Acceptance Rate (FAR) of one in 10,000, Level 2 has one in 100,000, while Level 3 has one in 1,000,000. The difference between the first two levels is indistinguishable to the user. However, the difference between Levels 2 and 3 is noticeable because scans take longer both for enrollment and authorization.

Although the BioMouse will work under Windows 3.1 and 95, those operating systems are not truly secure, and the BioMouse could be circumvented with some work. Its real strength is when it is installed on an NT machine. In this situation BioMouse works with NT's inherent security to create a truly stable and secure environment. This is obviously the intended market for the device.

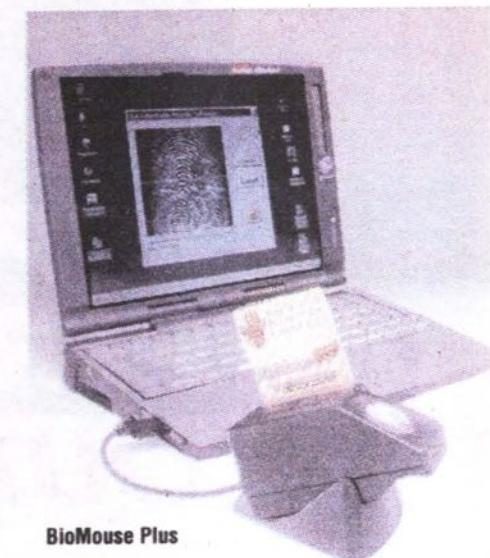
A BioMetric spokesperson told *The Computer Paper* that the BioMouse will eventually be Windows 98 compatible, but not until current work has been completely on NT 5.0 compatibility. Considering that the expected release date of NT 5.0 is December 1998 at the earliest, it is clear the company is focusing on the NT architecture. The Windows 98 product, when it arrives, will also be priced lower to attract home users.

One of the only downsides to the BioMouse is that the red light emanating from the fingerprint scanning window is always on. There is no switch to turn it off and it does not automatically turn off—even when the machine is shut down. You have to unplug the AC adapter to turn it off. To be fair American BioMetrics projects the life expectancy of the light at greater than the life expectancy of the computer. This is a small point especially in light of the fact that the company will have released BioMouse Plus by the time you read this.

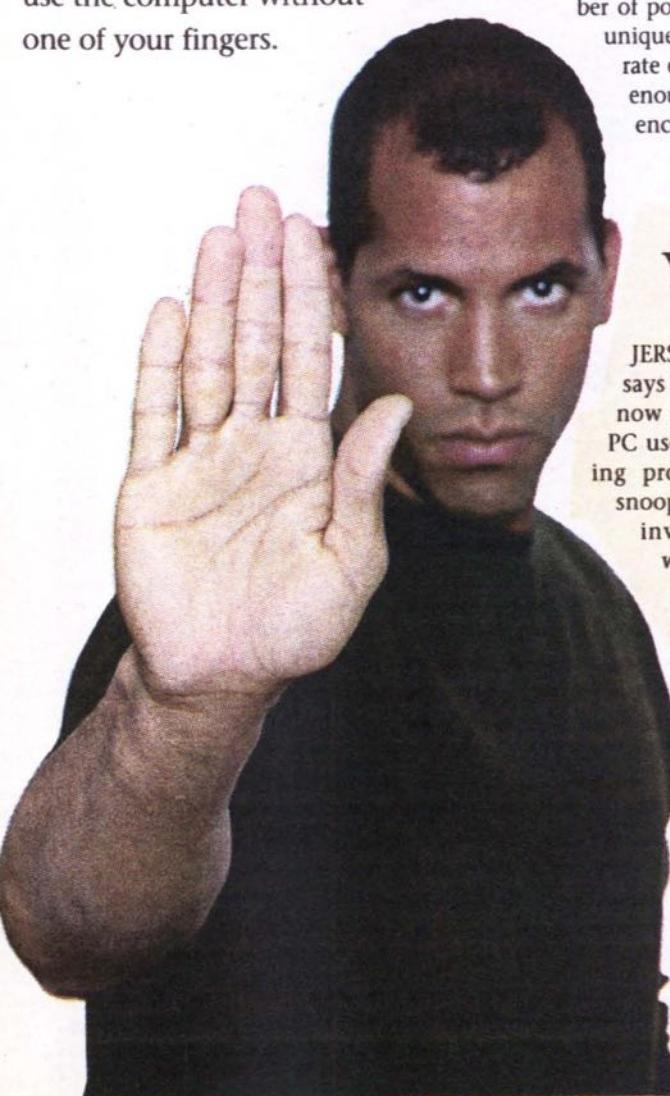
BioMouse Plus (with an estimated price of

US\$349) has an auto power-off feature but, more importantly, a Smart Card reader as well. Your first thought may be for what purpose? The uniqueness of your fingerprint combined with the sophistication of the Smart Card, which can hold 100 times more data than a magnetic stripe card, means very effective security. This combination of technologies creates an individual authentication system that is highly portable, difficult to defeat and applicable to many situations.

American BioMetric has formed an alliance with Entrust Technologies a company that works with public key encryption security. The alliance means passwords that are currently used in public key systems would be replaced by algorithms based on the user's fingerprint. The resulting system would allow desktop and laptop users to send encrypted, authenticated email and attachments without losing their password. □



BioMouse Plus



Your face is your password with Visionics system

JERSEY CITY, N.J. (NB)—Visionics says its Facelt7 PC software system is now available for regular and home PC users for a variety of uses, including protecting their data files from snoopers, greeting visitors with an invitation to leave a message, watching the surrounding area for intruders or keeping an eye on the kids and dogs.

Facelt7 PC is based on the Facelt DB heavyweight security system for high-power enterprise users.

A Visionics spokesperson says Facelt DB "captures your image as you walk through an office building, department store or airport. It immediately links your image up to a database that reports back to local security if you are wanted for a crime, or are a missing person."

Newsbytes notes the Orwellian overtones may be overshadowed in such crowded venues by the ability to keep tabs on suspected terrorists and others who threaten personal safety. Some have also recommended such systems as a way for corporations to keep track of who spends too much time in the break room.

The Visionics spokesperson said the new PC version lets workers or home users leave their computers without concern about privacy issues or intruders. The program automatically secures the system with a screen lock and only unlocks when the authorized user shows his face again—literally. There is no need to enter key strokes since the program automatically recognizes a user.

Facelt PC also records all persons who come into an area, whether they want their picture taken or not. The program can then forward the images to a remote system, if told to do so. This lets a user keep track of what is happening at an office or at home.

A mini-movie greeting left on a

machine can invite visitors to leave a text message along with the facial image for authorized users to retrieve later, or send to a remote location.

Facelt's encryption software protects confidential files, then uses facial identity to unlock the decryption program. The spokesperson said the PC version of the program is based on the U.S. data encryption standard, or DES.

Facelt PC requires a 90 MHz or faster Pentium-based system with Microsoft Windows 95, a CD-ROM drive, a Microsoft Video for Windows-compatible video capture system with 320x240 resolution and 15-bit RGB (red green blue) capture-to-memory of five frames per second. The drag-and-drop software is fully integrated into Windows 95 Explorer, the firm said.

Facelt PC sells for US\$149.95. A 15-day free trial is available.

Contact: Visionics <http://www.faceit.com>

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Encryption on the desktop*Continued from page 22*

Software. This is the same program, newer version. Network Associates merged with Helix and acquired the product. The new version of PGP for Personal Privacy maintains compatibility with previous versions including Nuts & Bolts. All in all, Pretty Good Privacy is a pretty good program.

VeriSign Digital ID

From: VeriSign Inc
Mountain View, CA
Web: www.verisign.com
Price: US\$9.99/year

Like PGP for Personal Privacy, VeriSign Digital ID is an email encryption and verification product. Unlike PGP, it doesn't encrypt files for hard drive storage.

VeriSign is the world's largest provider of digital IDs for individuals and businesses. Currently the company has issued more than two million personal ID certificates. VeriSign software can encrypt your message but it is also used to verify that you sent the message and that it has not been altered since you sent it.

If you use Microsoft Outlook you'll notice the organizer uses VeriSign for email security, and even mentions the company by name in

the Help file. Because of this, setting up an account (there is a 60-day free trial) and having your digital signature appended to all outgoing messages is simply a matter of checking the correct boxes under Options in Outlook. In Netscape, choose Security/Preferences/Site Certificates. VeriSign is not so much a program as a service combined with a small unobtrusive applet for your email program.

As you might expect, PGP and VeriSign IDs do not work together. Thus, if you encrypt a message with one and send it to someone who uses the other, your message will be garbled.

But that is about to change. On June 22

both Network Associates and VeriSign Inc announced an agreement to make their public key systems interoperable. The announcement will mean the building of a public key infrastructure, which will bring together the two largest public key issuing companies and likely standardize the field. This is good news and will accelerate the move toward transparent and convenient email security.

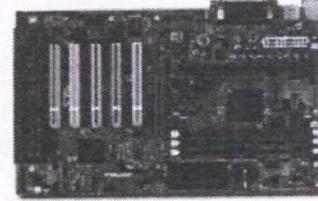
Currently your files and email live a simple life likely safe from theft or copying. In the future, your data—wherever it lives—will be bulletproof. That's a good thing, because crooks can be smart and sometimes the future is a scary place. □

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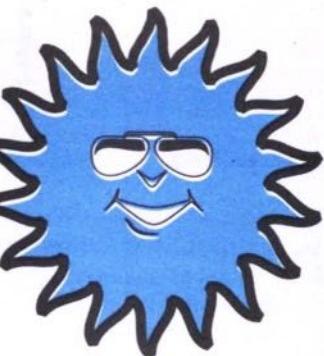
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CL-CP-898

How to steal company info

By Steve Gold

LONDON, England (NB)—According to a British survey carried out by Reed Exhibitions, the easiest way to steal large companies' vital information is through the Internet gateways of their accountants, lawyers,

advertising and public relations agencies.

Reed claims 62 percent of these professional advisors are using the Internet without any security in place, needlessly exposing their clients' data to potential theft, breaches of confidentiality, manipulation of data, deletion of files, and to their competitors.

According to the company, many large organizations that invest heavily in their own information technology (IT) security systems may not be aware that their systems are being circumvented by their professional advisors.

The survey, commissioned by Reed and

Check Point Software Technologies, claims to show 80 percent of medium-sized professional advisors are now using the Internet as a business tool, and of these, 62 percent are doing so without any Internet security.

Of the 80 percent using the Internet, Reed claims 56 percent had it connected to their networks, of which only 18 percent had a firewall in place.

Tim Porter, an event manager with Reed, said the results of the survey are extremely worrisome. "If companies use the Internet without a firewall or other form of security, it is like leaving the front door of your house wide open, allowing anyone to steal your prized possessions," he explained.

Porter claims the survey has exposed a major rupture in "the IT security chain." Large companies, he notes, often spend millions on their own IT security, but are ignoring their professional suppliers' security standards.

He says companies often impart vital information to their medium-sized professional advisers, such as detailed company accounts, marketing plans, designs, legal information, employee information and at the same time, "they are overlooking the fact that 62 percent of these companies have no form of Internet security, whatsoever."

Steve Barnett, Check Point U.K.'s managing director, said that, as the use of Internet technology continues to skyrocket, the scale of this issue will grow. "The results of the survey highlight the fact that large companies investing millions in IT security systems could in fact be wasting time, resources and money if security breaches are occurring via its professional advisors."

The survey shows that, of the three professional groups surveyed, lawyers appear to be best protected, as 50 percent of those firms with an Internet connection have a firewall or some other form of Internet security.

Of the accountants surveyed, Reed claims 60 percent are using the Internet with a network but do not have it protected by a firewall and only 32 percent with an Internet connection have a firewall or any other form of Internet security.

Of the advertising and public relations' agencies surveyed, Reed claims all were connected to the Internet, although an astonishing 94 percent admitted to using the Internet with a network and not protecting it with a firewall.

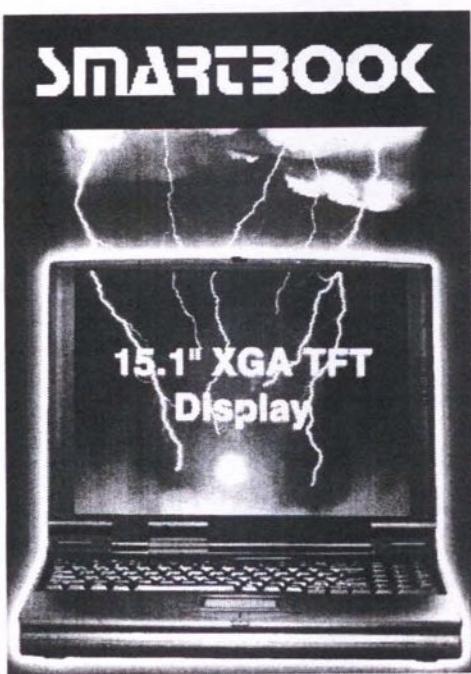
Interestingly, the survey found 89 percent of the companies surveyed have invested in antivirus software, with 70 percent using password control.

However, of those that have password controls, many acknowledged that it is often ineffectual as it is badly administered—one accounting firm admitted it uses passwords, but that everyone knows everybody else's password.

According to Porter, everyone is aware of the issue of viruses and the importance of passwords, "however it is obvious that most companies are totally unaware of the dangers of not having a firewall and yet how easy and inexpensive it is to implement."

The survey also found that 38 percent of professional advisers did not have a back-up system for the data on their computers.

Further details of the survey can be found on the Web at <http://www.infosec.co.uk>. □



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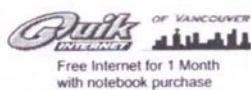
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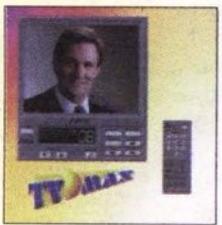
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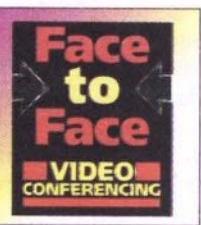
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Unplugged and productive

By Geof Wheelwright

For anyone who has ever spent significant time away from the office, but needed to be able to connect to either the corporate email system or data on the network itself, it's clear that the challenge often lies in getting one bit of wire to connect to another.

It's not always easy and it can often be a colossal waste of time, removing whatever strategic advantage your company may have perceived when it equipped you with all these high-tech goodies. There is another way of trying to connect, however, and it's one that corporations are increasingly looking at as a solution for the remote employee.

The answer lies in getting rid of the wires altogether and providing totally wireless access to corporate network and email. Wireless solutions allow "outbound" and remotely working employees to become entirely independent of traditional telephone lines, staying in touch even in areas where they can't easily get to a conventional landline.

Wireless data solutions are in heavy demand. In fact, a recent survey by European IT services group CMG and International Data Corporation revealed that 28 percent of the 300 respondents in the United Kingdom, the Netherlands and Germany are already using mobile phones to send and receive email. In addition, 12 percent were using their mobile phones for Internet access and a full 79 percent expected to be using mobile systems to do their email work by the year 2000.

High expectations

There appear to be a couple of factors driving these expectations. The first is simply that the corporate email system—and the corporate network and/or intranet—are becoming so vital to the operation of such a vast number of businesses that few employees can conceive of spending time out of the office without access to these vital tools.

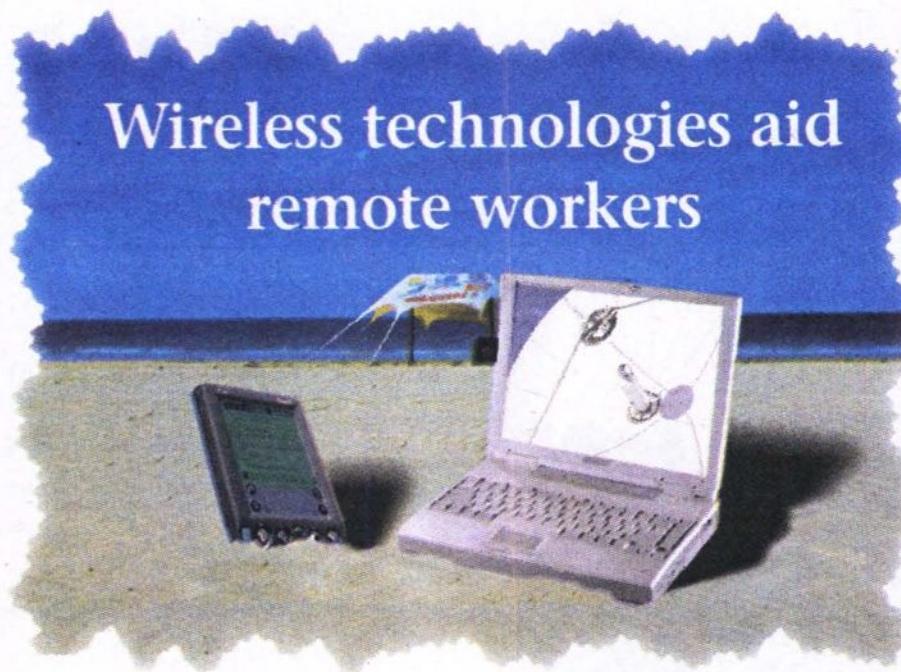
Failing to respond to email is not necessarily grounds for dismissal, but it certainly doesn't help your career. And saying "I was out of the office" is often no longer an acceptable excuse for being off the electronic culture of a company.

The second factor is that notebook computer, handheld computer and wireless data system designs will continue to improve in terms of ease of use, performance, reliability and speed. Recent developments in all those areas would tend to suggest that this is not an unreasonable expectation.

Finally, there is the hope that someone, somewhere, should have the good sense to be able to combine all of the things that people really want when they're away from the office into a single device. You shouldn't have to carry an armory of battery-powered gadgets just to be able to stay in touch while you are out of the office.

The Internet factor

And it appears that this is not just idle—or wishful—speculation on the part of those who sell wireless data systems. There does appear to be a demand for these services. According



You shouldn't have to carry an armory of battery-powered gadgets just to be able to stay in touch while you are out of the office

to a recent report by industry research organization The Yankee Group, one-third of the current U.S. workforce (about 43 million people), spends 20 percent of their time away from their primary workplace.

The report suggests that more companies are pushing their workers out into the field and abolishing fixed office space, driven by demand to stay competitive. It suggests that these mobile workers need easy access to huge resources of legacy enterprise data in addition to simple messaging capabilities.

The Internet, concludes the report, is also a huge factor in this demand for wireless data services. "The Internet's advantages in terms of ubiquity, simplicity and standardization make it ideal as the data equivalent of the PSTN [public switched telephone network] for voice," says Yankee Group director of Wireless Mobile Communications Roberta Wiggins. "As the Internet becomes increasingly compelling to the enterprise, its usefulness also extends out to the remote and mobile element of the enterprise."

It is still the early days, however, in terms of remote access to the Internet and corporate intranet being provided in a wireless fashion. The Yankee Group suggests that although 87 percent of the top 100 U.S. companies are developing intranet applications, only 20 percent of surveyed companies have provided remote Internet/intranet access via wireless to their mobile workers so far.

"The pervasiveness of intranets will stimulate efforts to incorporate remote workers into integrated business practices," predicts the report. "However, among corporations today the focus is more on using intranets to connect remote company locations than providing mobile access. While field support managers can readily justify the technology, infor-

mation technology is less motivated to accommodate remote access requirements, especially via wireless networks."

Respondents to the Yankee Group survey cite perceived high cost, and conflicting priorities as the most important reasons for not providing wireless access. Wireless also apparently accentuates end-to-end management and security concerns.

The report also suggests that the Internet is both a blessing and a curse for wireless. On one hand, it says the Web is creating an expectation, in terms of information delivery, that cannot be met by wireless data networking. Most wireless data networks cannot yet provide the smooth bandwidth needed for Web or intranet page browsing (except, perhaps, for simple text pages) in a way that is cost effective.

At the same time, the report concludes that the Internet does offer the means to drastically reduce the cost and complexity of wireless data integration. By finding a way to bring together the two technologies, it suggests that it may be possible to "break the logjam that has stifled wireless mobile data in the form of underutilized networks, low revenue and lack of applications".

Over the next six years, it further predicts that corporations will increasingly store mission-critical information on intranets and most corporate email systems will be accessed remotely over the Internet.

The Yankee Group estimates that 33 percent of large U.S. corporations will be providing field service and sales personnel with wireless intranet access by the year 2000. It also forecasts a potential 21.3 million users by 2002 resulting primarily from availability of packaged Internet access solutions, attractive flat rate service pricing for unlimited use,

wireless network speeds equivalent to ISDN or above, widespread adoption of Internet based email, higher value, more personalized Internet content, and user-friendly device interfaces incorporating voice recognition and text-to-speech technologies.

The server solution

Another serious option to consider is a system that will allow you to provide a wireless "gateway" to your corporate email system. A number of companies provide such services, including Vancouver-based Infowave Wireless Messaging Inc. and the "Mobility" divisions of the Stentor group of provincial telephone providers. These services have made it easier to connect the latest breed of Windows CE-based handheld computers to email messaging servers.

While these services differ on a number of important technical dimensions, the user experience is similar. All offer a wireless data communications system that relies on sending and receiving data using radio technology. It requires that you have a radio-based link into and out of your corporate email system and provides server and client interfaces for Lotus cc:mail, Microsoft Exchange and Microsoft Outlook. Infowave uses the Cantel/AT&T Canada Mobitex wireless data network, Bell Canada Mobility offers a service based on the Ardis wireless system, while BC Tel Mobility and several other provincial Mobility organizations are using a CDPD-based network that allocates part of the digital cellular phone bandwidth for data. (See "Wireless modem, handheld PC a natural fit" and "Wireless datacomm nearly there" in the June '98 issue of TCP, available online at <http://www.tcp.ca> for more information.)

There are Windows CE 1.0 clients and a recently released Windows 2.0 client. Once you have the server link to the radio network established, the basis of the system is quite simple.

On your laptop or Windows CE 2.0 handheld, you simply attach a wireless radio PC data card, which can then be used to access the radio data network from many major cities in North America and elsewhere for sending and receiving email.

The system has several advantages over analog or PCS digital phone-based email access systems. The major advantage is that the mail system is "always on" and when mail is received, it is simply forwarded on from your corporate server to your notebook or handheld computer. Similarly, outgoing mail is forwarded from the mobile computer—via the radio network—to the company's server and out to its destination. The only real disadvantage of these systems is that they do not currently offer any form of Internet Web access.

If you need wireless Web browsing, you'll still need to look at a solution that goes out over the phone line to connect to a traditional Internet service provider (ISP). But for corporations that need to provide reliable, effective and broad-based access to corporate email for mobile employees, wireless email seems a great solution that should be given serious consideration. □

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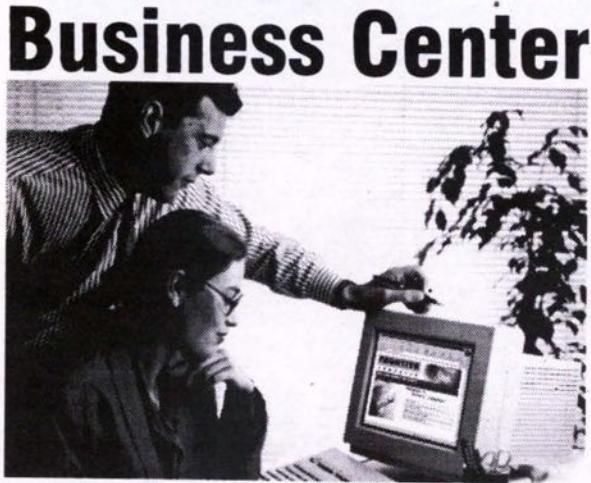
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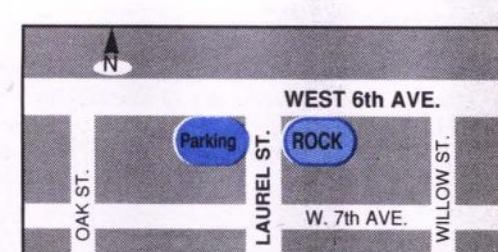
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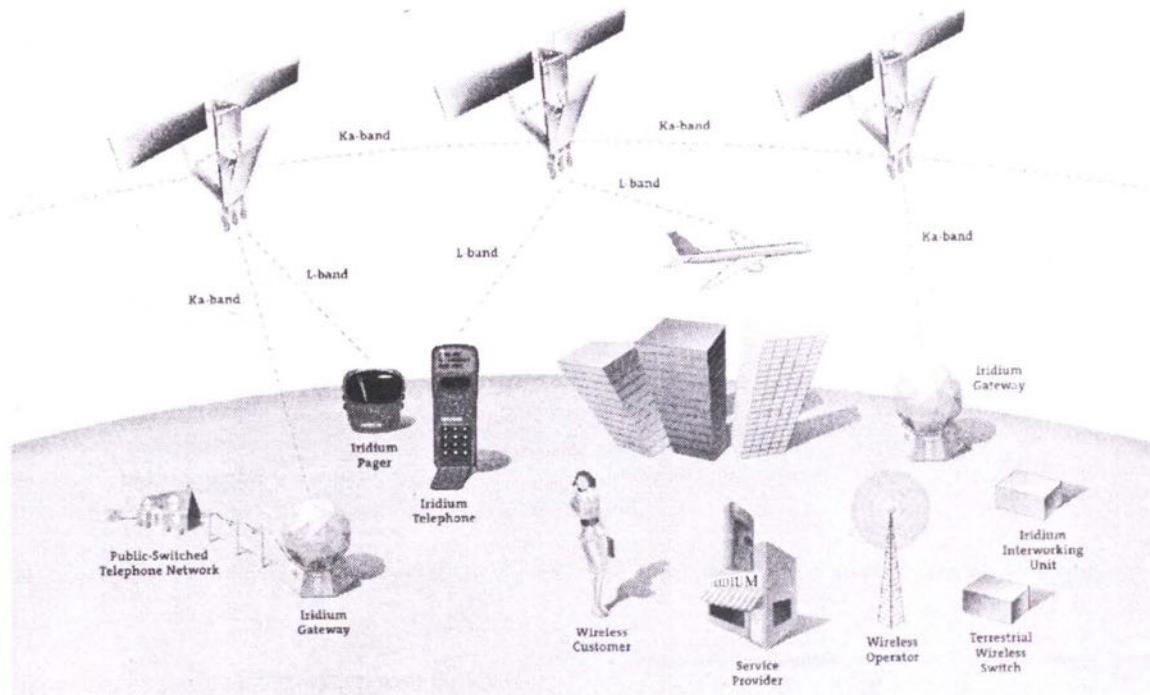
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Lots of Parking on Laurel



By Geof Wheelwright

Do you feel a little bit naked without a mobile telephone? Do you go on long walks in the country, find yourself out of dial tone range, and feel haunted by the feeling that someone is trying to get hold of you?

It may well be time for some long overdue therapy to quell the separation anxiety so obviously stirring disquiet in your soul. On the other hand, you may be a candidate for a new type of mobile phone and pager service from a company called Iridium LLC.

Iridium is an international consortium of major telecommunications and industrial companies funding the development and implementation of an ambitious satellite-based global communications system. Designed and built by Motorola's Satellite Communications Group based in Chandler, Ariz., the 66 satellites in the Iridium constellation are the key to allowing you to turn your quiet walk in the forest into a gab-fest with friends halfway around the world.

According to Maurice Rompre, president of Iridium Canada Communications, the company hopes to have 100,000 subscribers signed up as either Iridium mobile satellite phone or pager users by the year 2004. The company will start serving subscribers Sept. 23. Rompre suggests that anyone who wants to have access to a mobile phone anywhere on the planet—at any time of day—is a good candidate for subscribing to the Iridium service.

Oh, and they'll need a pretty good bank balance as well. Calls made via Iridium's satellites will be priced in the "dollars per minute" category, depending on where you are calling and what time of day it is. And that's not counting monthly subscription fees and the cost of the phone itself.

But Rompre says for most prospective customers, price is not

an issue. "We are selling connectivity. This is it, pure and simple," he explains. "It is basic dial tone on a worldwide basis. For those who need it, it will be available. For the customers we have met, price is not an issue."

"It is basic dial tone on a worldwide basis. For those who need it, it will be available. For the customers we have met, price is not an issue"

—Maurice Rompre, Iridium Canada

But just who those potential customers? Rompre admits they will probably be a tiny minority of existing mobile phone users, although he hopes to win a lot of market share from those few hearty pioneers who have already paid a premium price for a bulkier satellite phone.

"Worldwide, we are targeting about one to 1.5 percent of cellular/PCS/GSM [the three major mobile phone standards] users," he says. "In Canada, it could go as high as two percent because of our dimensions and geography. We are also targeting business travelers, the forestry industry, mining and fishing sectors. In the satellite phone market, we think that there will be three competitors and we hope to have 60 percent of that market initially and then retain 40 percent as it grows."

Yes, but why? Why would people want to spend even more money so that even more people could bother them in those few quiet and uninterrupted moments they have in their lives? Could it be that they just want to be seen to be important enough to need a phone that can be used from the Amazon to the Arctic Circle?

"Some could consider it a status symbol," admits Rompre. "I remember when car phones first came out there were people who made a for-

tune just selling cellular antennas without the phone. I am after the market of people who will generate calls, people who will spend \$3,000 per month."

He says that while this may be a steep price for most users, it may

Anywhere, anytime

Iridium's 66 satellites keep mobile phone users connected—for a price

from a company called Teledesic (which is backed by Microsoft co-founder Bill Gates and his wireless communications billionaire pal Craig McCaw) are already well-advanced, although that network is aimed more at creating high-speed wireless Internet access rather than another mobile telephony solution.

So what goes into creating such a network? Well, in the case of Iridium it means launching a whole ton of satellites quickly and successfully—a task that was completed in May with a Delta II rocket launch from Vandenberg Air Force Base in the United States. It was the 15th successful launch in 12 months for Iridium, marking what the company says was the quickest deployment of the largest number of satellites in history.

And it involved launching satellites in almost every manner possible, including Iridium satellite launches using the Boeing Delta boosters in the U.S., Russian Proton rockets launched from the Baikonur Cosmodrome in Kazakhstan, and Chinese Long March 2C/SD rockets launched from the Taiyuan Satellite Launch Centre in China.

Rompre says the company expects each of these satellites to operate for seven to eight years. Enough fuel has been put on board to allow maneuvers and course corrections for that length of time.

He adds, however, that the speed of development in both the hardware and software underlying modern satellites means that Iridium is already planning the launches of "second generation" satellites. The pace of satellite development by that time is expected to be so rapid that the second generation satellites will only serve for five years before they are replaced by a third generation.

True global access

In June, Iridium announced it had reached 209 distribution agreements with regional wireless service

providers and roaming partners. The company says these partnership agreements make Iridium satellite phone service available to more than 72 million wireless subscribers, covering 3.4 billion people around the world, or 60 percent of the world population.

Iridium has signed agreements with some of the largest telecommunications and paging companies in the world, including AT&T Wireless (U.S.), Telecom Italia (Italy), DDI (Japan), Miniphone (Argentina), Cellnet (U.K.), Orange (U.K.) and PageNet (U.S.). In addition to providing the traditional wireless services, these companies will act as Iridium distributors, effectively extending their customers' wireless service territory beyond local coverage to encompass the entire planet.

"Each new partner brings us one step closer to delivering the first and only global wireless telecommunications network to customers worldwide," boasts Edward F. Staiano, Iridium's vice-chairman and chief executive officer. "The aggressive leadership in the 15 Iridium gateway operating companies will soon permit Iridium products and services to be distributed in markets throughout the world."

Iridium is also boasting that it is the only satellite telephone company with a network designed to offer service throughout the world's 239 countries on all continents. Staiano says subscribers will remain connected by using mobile handheld telephones with both satellite and cellular capability, allowing use of the Iridium satellite network when local wireless services are unavailable.

Some 15 Iridium gateway operating companies (of which Iridium Canada is one) are responsible for establishing and managing relationships with service providers and roaming partners throughout their service territories. Iridium gateway operating companies also act as regional distributors of Iridium. □

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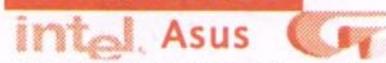
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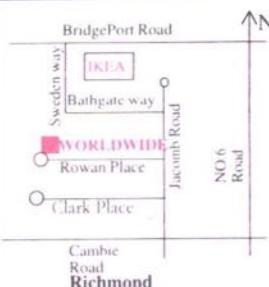
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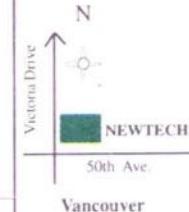
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Wireless networked vehicle piques interest

By Geof Wheelwright

In the future, your car may spend as much time on the Internet as you do. Prototype "network car" designs currently making the rounds of major automotive shows are starting to be taken seriously by the world's biggest automobile manufacturers. These prototypes include everything from global positioning systems (GPS) for navigation, on-board satellite receiving dishes for Internet and high-definition television access, as well as voice-command capabilities to control all these goodies.

At the recent SAE International Congress and Exposition in Detroit, leading lights of the computer industry seemed to be as interested in the "real world" highways of the planet as they are in the "information superhighway." A joint development effort by Delphi Automotive Systems, IBM, Sun Microsystems and Netscape, for example, resulted in something called the Network Vehicle.

The Network Vehicle, which was first shown at the 1997 Fall Comdex computer industry bash in Las Vegas, seems to be gaining support. It now includes truckloads of hardware and software technology along with wireless communications, global positioning via satellite, head-up displays, voice recognition, Sun's Java software technology, microprocessors, Web access and collaboration, and other Internet/intranet features.

What really gives this effort credibility amongst auto makers is the participation of Delphi Automotive Systems, which already supplies electronics to a huge number of them (largely through its Delphi Delco Electronics Systems group). The customer list includes Audi, Chrysler, Daewoo, Fiat, Ford, General Motors, Harley-Davidson, Honda, Hyundai, Hummer, Isuzu, Mercedes-Benz, Mitsubishi, Renault, Rover, SEAT, Skoda, Suzuki, Toyota, and Volkswagen.

According to Dave Wohleen, general director of engineering for Delphi Delco Electronics Systems, there is potentially broad demand for this kind of car. "A networked vehicle will have tremendous appeal to drivers and passengers, offering a vast array of new features and functions," he says. "Much of the technology to do this, including our head-up displays, steering wheel-mounted controls, and man-machine interface in the passenger compartment, exists today. Working with vehicle manufacturers, these technologies could be integrated into all types of vehicles."

The concept vehicle receives direct broadcast reception from Hughes DirecTV and DirecPC satellites by use of an innovative flat antenna embedded in the roof of the vehicle. The Network Vehicle development team promises that this will provide driver and passengers with everything from route and travel information to movies and real-time stock quotes.

It also suggests that existing services that



could be integrated in the future include theft deterrent technologies and the ability to contact emergency services. In addition, GPS technologies can provide the vehicle's exact location. Additional future features include dictating and electronic distribution of email or faxed memos, setting work schedules via an in-car connection with handheld computers such as the IBM WorkPad version of the 3Com/US Robotics Palm Pilot, listening to and dictating a response to faxes, and viewing videos.

Delphi Delco Electronics Systems has not limited its partnerships in this area to IBM and friends. At the SAE trade show in Detroit, the company worked with Saab and Microsoft to create something called the Personal Productivity Vehicle.

It's a custom version of the 1999 Saab and includes a huge number of entertainment and computer functions based on Microsoft's Windows CE 2.0-based Auto PC platform. Developed at Delphi Delco Electronics System's Mecel AB subsidiary in Goteborg, Sweden, the Personal Productivity Vehicle combines Microsoft's Auto PC software platform with integrated AM/FM receivers, CD-ROM, IrDA (infrared connection), serial port interface, universal serial bus (USB), COM-PACTFLASH expansion slot, and a 256x64 display.

The companies say that all these extras provide steering wheel controls, interactive speech technology to respond to driver commands, and speech synthesis to communicate text information that allows drivers to "keep their hands on the wheel and eyes on the road." As with the Network Vehicle, speech recognition can be used to allow the driver to send email, obtain turn-by-turn GPS-based navigation to a specific destination, ask for traffic and weather conditions, locate a restaurant or hotel, or change the musical selection on the stereo.

There's no word yet on when these new "online" cars will hit the road—or the information superhighway—but it is certain that you'll start seeing at least some of these features on the "options list" at your local car dealer's lot sometime soon. □

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Wi-Lan's future in spread spectrum

By Geof Wheelwright

Some things in life just make plain good sense together: apple pie and ice cream, steak and potatoes—or how about wireless communications and Internet access?

One company that is enjoying real commercial success in bringing datacommunications and wireless technologies together is Calgary-based Wi-Lan Inc. Its goal is to use "spread spectrum" technology to enable a whole range of wireless data communications applications including high-speed wireless Internet access.

The beauty of spread spectrum is that it allows a radio signal containing data to be spread over a frequency range greater than the minimum bandwidth used for radio-based data transfer applications. This minimizes interference that may exist at any specific frequency and increases the level of security of the data transmission (because the data is not tied to transmission at any single frequency). The company also claims staggering potential data transfer speeds of up to 20 Mbits per second in some applications, making it far faster than any land line-based Internet connection currently available.

Wi-Lan was founded in 1991 by former Alberta Government Telephones (AGT, now known as Telus) Ltd. researcher Dr. Hatim Zaghloul and University of Calgary associate professor Dr. Michel Fattouche.

So far, the company's technology has moved it into an intriguing number of areas, starting in 1995 with the release of its Hopper DS wireless modem. The Hopper allowed customers such as Saskatchewan-based oil and gas producer, Wascana Energy, to remotely monitor oil well sites in distant locations.

Wi-Lan has used similar technology to provide wireless "Ethernet bridges" to connect networks without spending a lot of money on cabling infrastructure. This solution was used by the Medicine Hat school district in southeastern Alberta to create a wireless wide area network (WAN) that could be used to connect



Wi-Lan CEO Dr. Hatim Zaghloul

its 15 schools, a library, several administrative buildings and 1,500 computers—and give them all access to the Internet.

And in June of this year, the company announced that it had signed a contract with Tele2 U.K. Ltd. (a subsidiary of the multinational Millicom International Cellular S.A.) to supply a "wireless local loop" system for a national wireless data network in the United Kingdom. The goal will be to offer high speed Internet access and intranet services to small- and medium-sized businesses and telecommuting employees, starting in the well-heeled Thames Valley area outside London.

The companies have promised that the service will offer connection speeds at up to 2 Mbits per second (about 15 times faster than is currently possible over the ISDN high-speed land lines available from British Telecom) and will become available in limited areas starting next year, with the capacity to reach 60 percent of the United Kingdom by 2003.

According to Zaghloul, who is currently president and chief executive officer of Wi-Lan, all of these opportunities began with a realization in the early 1990s that data transmission over phone lines was going to be a huge opportunity, whether those phone lines were wireless or land line-based.

He says, for example, that while data traffic on land lines went from being negligible in 1970 to 10 percent of the market by 1991, it only took another six years—until 1997—for data traffic to exceed voice traffic on land lines. He suggests that within a few years, data traffic could be as high as 95 percent of the volume on land lines (although he agrees that some confusion is likely as Internet telephony could be classed as data traffic even though it is carrying voice digitally).

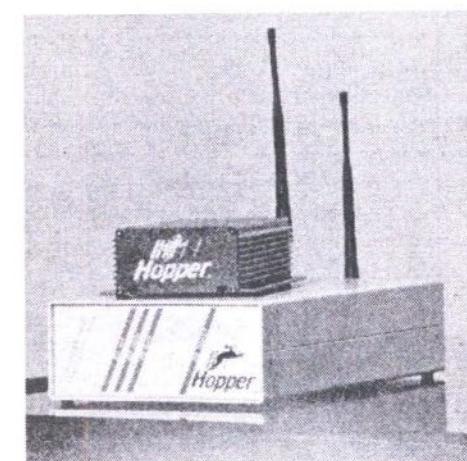
Zaghloul says the contract in the U.K., plus other foreign deals in the United States and potentially in China, should ensure that Wi-Lan is not a "one-deal company" and that its technology is both popular enough and powerful enough to make a real long-term impact on the wireless data market. As part of its growth, the company recently went public, although Zaghloul says he does not worry about he and

his co-founder losing control of it at this point since they still hold 30 percent of it.

"It is a significant deterrent [to any potential hostile takeover] as we are not as widely held as being public suggests," Zaghloul says. "Having said that, everything is for sale at the right price."

He says his main objectives are to build and diversify the company. Wi-Lan runs several subsidiary operations, including Calgary-based Cell-loc, which produces cell location systems for mobile telephone companies that need to comply with recent U.S. Federal Communications Commission (FCC) regulations that require them to be able to pinpoint a cell phone call to within 125 sq.m of its origin. In addition, Wi-Lan has a stake in California-based Wireless Inc., which develops and produces wireless telephony products using Wi-Lan's technology platforms.

One other investment Wi-Lan made recently was in acquiring the original patent rights for spread spectrum technology. And the acquisition comes from an unexpected quarter—film legend Hedy Lamarr, who co-developed a technology in 1942 that became known in wartime as the "Secret Communications System" and for which Lamarr has received little credit. Zaghloul, who has been a fan of the screen legend since boyhood, announced in late June the deal to acquire her patent rights and promote her role as a telecommunications pioneer. It's a story that could have been made in Hollywood. □



Wi-Lan's Hopper DS wireless modem

blurred between the leisure traveler's desire for tranquillity and the business traveler's need for constant communication," Crystal Cruises officials say.

Crystal has offered shore-to-ship email service since January 1997. But with the old system, email was sent to a main ship address and routed through the radio room.

Now, the cruise line has established a new server that enables guests to personalize their email addresses. A bit of hoity-toityness is added, too, with the name of the ship being included in the email address.

Intra-ship email is also available, for those urgent email messages between passengers: "Charlie, this is your wife. Quit running up the bar tab."

Email isn't the only way Crystal has put

the "cyber" in cybercruise. A University@Sea program is available for vacationers who can't get the silicon out of their systems. Guests can expand their computer skills and learn new programs in specially constructed, dedicated lab spaces on each ship equipped with 22 computer workstations.

And for those people who cannot fathom the thought of not having a PC constantly at their side, they can rent notebook computers and even receive in-stateroom, private instruction.

Imagine: Go on a cruise, never leave your room.

—Bob Woods

Contact: Crystal Cruises,
<http://www.crystalcruising.com>



Not just a pretty face

The brains behind the technology of Wi-Lan's high-speed wireless Internet access system is Hedy Lamarr, the screen legend who starred in more than 25 films with the likes of Clark Gable, Claudette Colbert, Judy Garland and Spencer Tracy.

At 26, Lamarr developed what is now called "spread-spectrum" technology—which reduces the need to lay expensive cable across vast distances—with avant garde musician George Antheil.

The pair created what they called the Secret Communication System as an anti-jamming device intended for use in U.S. submarines in Second World War.

The system was intended to guide torpedoes to their target without enemy interception by sending messages over multiple radio frequencies in a random pattern. As a message was sent, both the transmitter and the receiver would change radio frequencies according to a special code. Identical slotted paper rolls dictated the code according to their pattern of slots at the end of the transmission. The message would move so quickly across the radio waves that anyone tuning into a particular frequency would only hear a blip, and would be unable to translate or intercept the message.

The wireless technology has proven useful in areas with limited telephone and Internet access and is used today in a range of military and civilian applications.

Lamarr's interest in military technology came from her 1933 marriage in her native Austria to Fritz Mandl, one of Europe's largest armaments manufacturers. She later left Mandl and moved to the United States after signing her first film deal.

In 1941, Lamarr and Antheil sent the invention to the National Inventors Council. They ironed out some technical links with an MIT engineer, and submitted their patent proposal. They were awarded U.S. Patent number 2,292,387 for the Secret Communications System on Aug. 11, 1942.

The patent rights expired in 1958, just as the invention was being reborn because digital components replaced paper rolls. An electronic spread-spectrum system derived from the 1942 patent was used to handle secure communications for the U.S. during the 1962 Cuban Missile Crisis.

The rest, as they say, is history. □

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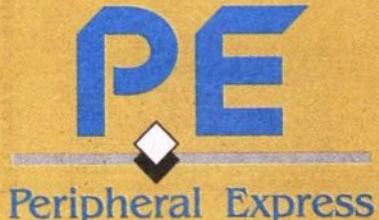
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FTC misinterpreted antitrust law, Intel says

By Patrick McKenna

SANTA CLARA, Calif. (NB)—Intel Corp. spokesperson Chuck Mulloy responded to the complaint filed in early June by the U.S. Federal Trade Commission (FTC) by saying that the government agency is "trying a new law that says companies our size do not have the right to exercise intellectual property rights." The case could take more than a year to conclude.

The FTC complaint alleges Intel withheld key technical information from leading computer makers such as Digital Equipment, Intergraph and Compaq Computer, in order to stifle competition and impede innovation.

While Intel says the company plans to follow a prescribed administrative process, it is clearly ready to vigorously defend its actions. Intel said the complaint is based upon a mistaken interpretation of the law and the facts.

"For years Intel has shared its intellectual property and early samples of its products with a number of key customers," said F. Thomas Dunlap, Intel vice-president and general counsel. "These customers work with Intel to develop products for the market on a mutually beneficial basis. We believe the ultimate beneficiaries of this approach have been consumers, because they get the latest technology and best products as soon as possible."

"The commission's decision today signals that they want to change the very laws upon which we've based our policies," Dunlap said in response to the antitrust claim.

The complaint was filed as an internal FTC action, which goes to an FTC administrative law judge for trial. Attorneys familiar with the process say it could take a year or more for the case to be heard.

According to Mulloy, the judge's decision or recommendation is then presented to the five-member FTC commission when Intel can also present its objections. If the panel accepts the judge's recommendation, Intel still has the right to file an appeal in a federal court. On the other hand, the FTC has appeal rights should it object to the judge's decision.

The first phase with the administrative judge could take as long as one year. An appeal could extend the case for several years.

Intel contends that the decision by the FTC attempts to assert a new legal theory under antitrust law. Mulloy said the FTC has to show harm to competition as a requirement of an antitrust claim. "Our dominance is in the PC desktop marketplace," he continued. "They cannot show any harm in this area. These complaints have to do with workstations and we have a number of cross-licensing agreements with leading companies in that area."

"The FTC's theory insists a company with high market segment share like Intel cannot use its intellectual property rights even against a company that threatens its core business, and even when there is no harm to competition," Mulloy also said. "The Supreme Court has already denied this theory."

"In the end we believe that this administrative process will conclude that our actions and practices are lawful," Mulloy added.

According to the complaint, the three companies tried to enforce their own patents on computer parts and technology. Intel retaliated by withholding vital technical information and threatening to cut off the supply of chips, the FTC alleged.

"If Intel can use its monopoly position in

the market for microprocessors to prevent other firms from enforcing their own patents, other firms will have little incentive to invent new features to challenge Intel's dominance," said William J. Baer, director of the FTC's Bureau of Competition. Baer said Intel forced the three companies to share valuable patents

they held that could otherwise have led to the development of competing microprocessors.

In general, industry observers say the case will have far less impact on Intel revenues than business matters such as PC sales and other market trends. Currently, the FTC is seeking to force Intel to change its

business practices.

At press time it was announced that Administrative Law Judge James Timothy had rejected Intel's request to delay the deadline to respond to the FTC antitrust complaint. Intel will begin presenting its case before the judge July 13, as scheduled. □

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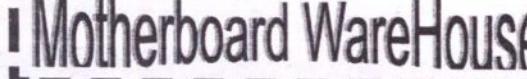
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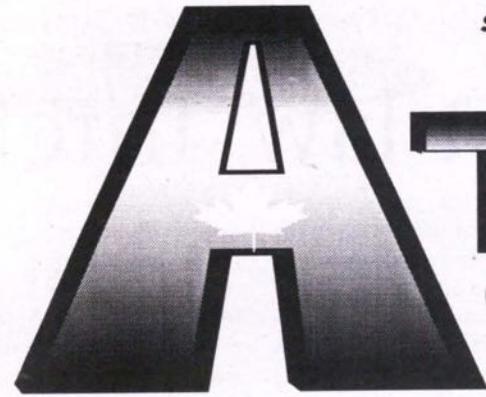
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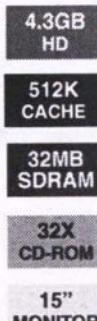


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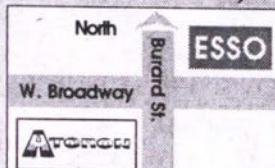
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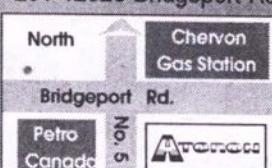
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ATI Xpert 98 8M AGP\$119
ATI Xpert@Work AGP 4M/8M\$119/159
ATI Xpert@Play 98 AGP 4M/8M\$149/179
ATI All-In-Wonder Pro 4M/8M AGP	.....\$319/379
Diamond Stealth G460 8M AGP	.....\$129
Diamond Viper 330 4M PCI/AGP	.....\$129
Diamond FireGL Pro 8M PCI/AGP	.....\$249
Matrox Productiva 8M AGP	.....\$99
Matrox Millenium II 4M PCI/AGP	.....\$179
Millenium G200 AGP 8M	.....\$189
Mystique G200 AGP 8M	.....\$199
Monster 3D II Voodoo2 8M/12M	.....\$279/329
Creative 3D Blaster Voodoo2 8M/12M	.....\$259/329
Canopus Pure 3D II Voodoo2 8M/12M	.....\$399/479
STB Velocity 128 3D 4M/8M AGP	.....\$129/169
STB 4400 nVidia TNT	.....Call
Tekram How-R-U Video Conferencing Kit	.....\$179
Daytek 1436/15" 1531 .28 Digital	.....\$199/259
Acana 14"/15" .28 Digital	.....\$199/229
Sceptre 15" P511 .28	.....\$259
NEC 15" A500 .28/E500 .25	.....\$369/469
SONY 15" 100ES .25	.....\$409
Acer 17" 78c/99c 19" .26	.....\$519/849
ADI 17" 5P/ 19" 6P .26 1600	.....\$449/819
Daytek 17" 1731 .28	.....\$379
NEC C17/A700 17" Multisync	.....\$529/589
Panasonic 17" S70/P70/S110	.....\$569/689/1369
Sceptre 17" P73A .26/D73A .22 1600	.....\$449/519
SONY 17" 200ES .25	.....\$689
Viewsonic 17" V773/V95 19" .26	.....\$499/799
Viewsonic 17" GS771/ P775 .25	.....\$589/669

Sound Card

16bit 3D PnP Sound Card	.....\$21
Aureal 3D/S3 PCI Sound w/ Wavetable	.....\$39
Sound Blaster 16 3D/PCI PnP	.....\$43/59
Sound Blaster AWE 64/ PCI 128	.....\$75/139
SB AWE 64 Gold 4M (Retail)	.....\$199
80/320W Multimedia Speaker	.....\$17/39
GNT 5000 Speaker w/Subwoofer	.....\$49
YAMAHA M15/M20 Speaker	.....\$75/99
YAMAHA MS25 Spkr w/Subwoofer	.....\$109
Altec Lansing ACS45 w/Subwoofer	.....\$99
Altec Lansing ADA70 Digital USB Sub Call	
ACS48 PowerCube w/Subwoofer\$189

Misc.

Mitsumi 104 Keyboard\$18

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Sales & Service Centre

BESTOP

Mon-Sat: 9:30 - 6:00
Sunday: 10:00 - 6:00

Pentium 233MMX

Intel Pentium Processor, 512K Cache
Asus Pentium PCI motherboard, 512K
32 MB SDRAM Memory, 10ns
Panasonic 1.44 MB Floppy
2.5GB UIDE Hard Disk Drive
S3 3D Virge Video Card, 4MB
15" CSA Approved P/S Tower Case
32X Speed int. CD ROM Drive
SB 16-bit Compatible Sound Card
Pair of 90W Stereo Speakers
104 Keys Windows Keyboard
15" Non-Int. SVGA Monitor, .28mm
56K Int. Voice/Fax Modem
Free Canon BJC 250 Color printer
Free Compton's Encyclopedia 98
Free Logitech 2-Button Mouse
Free 1 Month Internet Access

\$1,199 **\$39**
/month

BesTop BUSINESS Intel Celeron 266

Intel Celeron 266 Processor
Asus P2E-B AGP motherboard
64MB SDRAM, 10ns
1.44 MB Floppy Disk Drive
3.2GB UIDE Hard Disk Drive
High performance AGP Video Card, 4MB
19" ATX CSA Approved P/S Tower Case
Built-in EIDE Controller, 2S/1P
104-Key Windows Keyboard
15" Non-Int. SVGA Monitor, .28mm
Free Logitech 2-B Mouse

\$999 **\$33**
/month

Celeron Special Upgrade Options:
33.6 V/F modem +\$49 / 24x CDROM +\$65
HP722C printer +\$379 / 6.4 GB HD +\$85

BesTop Solar 24X Pentium II 266MMX

Intel LX 440 Chipset motherboard
64 MB SDRAM 10ns / 1.44 MB Floppy
4.3GB Ultra DMA Hard Drive
High performance 3D AGP Video, 4MB
24X Speed Int. CD ROM Drive
Sound Blaster compatible Sound Card
104-Key Windows Keyboard
Pair of 90W Stereo Speakers
19" ATX CSA Approved P/S Tower Case
15" Non-Int. SVGA Digitalis Monitor
56K int. Voice Fax Modem
Free HP 692C color printer
Free Compton's Encyclopedia 98
Free Logitech 2-Button Mouse
Free 1 month Internet Access

\$1,599 **\$53**
/month

BesTop 32x CD Pentium II-300MMX

Intel PII-300 MMX Processor
Intel LX chipset motherboard, 512K
96MB SDRAM, 10ns
1.44 MB floppy
Quantum 6.4GB Ultra DMA H.D.
Diamond Stealth 3D AGP Video, 4MB
19" ATX CSA Approved P/S Deluxe Case
Built-in Controller, 2S/1P ports
17" Non-Int. SVGA Monitor, .28mm
32X Internal CD-ROM Drive
Sound Blaster 16 PnP Sound Card
Windows Keyboard, 90W Stereo Speakers
Free 2-button Mouse & Pad
Free Compton's Encyclopedia 98

\$1,699 **\$57**
/month

DeskJet 722C

- 600 x 600 dpi
- Smallest ink drops for more shades of color with Photo RET II
- Up to 8 ppm output
- Print media from plain paper to banners and iron-on transfers
- 1 year warranty



\$ 399

DeskJet 1120CXI

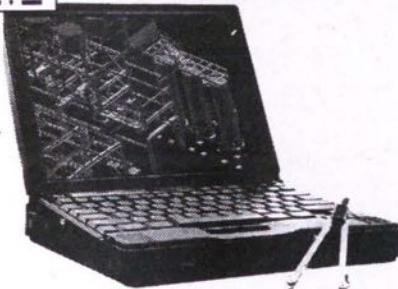
- 600 x 600 dpi
- Resolution Enhancement
- Up to 6.5 ppm output
- 600dpi Black & Color
- Print Black & up to 16.7 million color
- Print on any size media from 4"x6" to 13"x19"
- Smallest ink drops for vibrant, natural color w/ HP Photo RET!
- 1 year warranty



\$ 629



NoteBooks



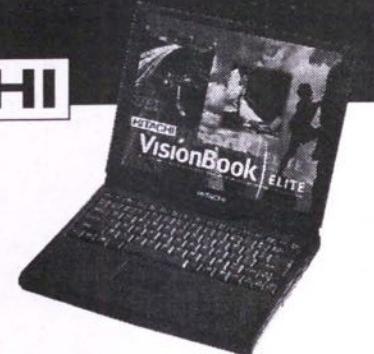
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HITACHI

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Acer



Model	CPU	Memory	HDD	CDROM	Display	PRICE
TP 310ED	166MMX	32 MB	2.1G	10X	12.1 DSTN	\$1,888
TP 380XD	233MMX	32 MB	3.2G	24x	12.1 HPA	\$2,999
TP 380ED	166MMX	16 MB	5.0G	20X	12.1 TFT	\$3,349
TP 600	233MMX	32 MB	3.2G	24X	13.1 HPA	\$4,199
TP 770E	PII266	32 MB	5.0G	N/A	14.1 TFT	\$6,199
TP 770ED	PII266	64 MB	8.0G	N/A	14.1 TFT	\$7,799

Model	CPU	Memory	HDD	CDROM	Display	PRICE
310CDS	200MMX	32MB	2.0GB	16X	12.1DSTN	\$1,949
320CDS	233MMX	32MB	3.8GB	20X	12.1DSTN	\$2,349
330CDS	266MMX	32MB	3.8GB	20X	12.1DSTN	\$2,849
320CDT	233MMX	32MB	3.8GB	20X	12.1TFT	\$2,949
330CDT	266MMX	32MB	3.8GB	20X	12.1TFT	\$3,499
490CDT	PII233MMX	32MB	4.0GB	20X	12.1TFT	\$4,399
780DVD	PII266MMX	64MB	7.6G	20X	13.3TFT	\$7,899

Made	CPU	Memory	HDD	CD ROM	Display	PRICE
Hitachi	133MMX	16MB	1.4GB	20X	12.1HASTN	\$1,699
Hitachi	200MMX	32MB	2.1GB	20X	12.1HPA	\$2,299
Hitachi	233MMX	32MB	3.2GB	20X	12.1HPA	\$2,599
Hitachi	266MMX	32MB	3.2GB	20X	12.1HPA	\$2,849
Hitachi	266MMX	32MB	3.2GB	24X	12.1TFT	\$3,699
Hitachi	266MMX	48MB	4.0GB	20X	13.3TFT	\$4,499
Acer	166MMX	16MB	2.1GB	20X	12.1DSTN	\$1,799
Acer	200MMX	32MB	2.1GB	20X	12.1DSTN	\$2,199

All advertised prices reflect cash discount. 2 years parts and labor depot warranty on all systems. All prices are subject to change without notice. All items are based on availability. Not responsible for typos.



BESTOP 36X CD PII-333 MMX

Intel P II-333 MMX Processor
Asus P2L97 AGP Motherboard, 512K
64 MB SDRAM, 10ns
1.44 MB Floppy Disk Drive
Quantum 6.4GB Ultra DMA H.D.
Matrox G100 Productiva AGP, 8MB
16" ATX CSA Approved P/S Deluxe Case
Built-in EIDE Controller, 2S/1P
Acer 17" Non-Int. SVGA Monitor .28mm
36X EIDE Int. CD-ROM Drive
Sound Blaster 16 PnP Sound Card
Windows Keyboard, 90W Stereo Speakers
Free Logitech 2-button Mouse & Pad

\$1,899 \$62
/month

NoteBook Special



- Intel Pentium 233MMX
- 32 MB EDO RAM
- 3.2GB Hard Drive
- 20X Int. CD-ROM Drive
- 2MB Video
- 12.1" SVGA TFT Screen

MegaBook 6300

- 16-Bit 3D Sound
- SVGA 800x600
- 33.6 K Int. Modem
- MS Window 98

\$2,299

BESTOP II-400 POWER

Intel Pentium II-400 MHz Processor
ASUS 440BX AGP Motherboard
512K Pipelined Brust Cache
128 MB SDRAM, (PC100 MHz)
Panasonic 1.44MB Floppy Drive
Quantum 6.4GB Ultra DMA H.D.
ATI Xpert @ Play AGP, 8MB
16" ATX CSA Approved P/S Deluxe Case
36X Int. UIDE CD-ROM Drive
Built-in EIDE Controller, 2S/1P
Fujitsu 8725 Windows 95 Keyboard
Free MS Intellimouse

\$2,299 \$75
/month

Acer

- Acer 15" 54e, .28mm +\$199
- Acer 17" 76e, .28mm +\$349
- Acer 17" 76c, .27mm +\$369

BESTOP 36X CD PII-350 MMX

Intel P II-350 MMX Processor
ASUS 440BX AGP Motherboard
96 MB SDRAM, (PC100 MHz)
Quantum 6.4GB Ultra DMA H.D.
ATI Xpert @ Work AGP, 4MB
16" ATX CSA Approved P/S Deluxe Case
Windows Keyboard, 1.44MB Floppy
36X UIDE Int. CD-ROM Drive
Sound Blaster 64 PnP Sound Card
Pair of 90W Stereo Speakers
Free Compton's Encyclopedia 98
Logitech 2-Button Mouse

\$1,949 \$63
/month

- Viewsonic 17" G773, .28mm +\$579
- Viewsonic 17" P775, .25mm +\$599
- Proview 19", .26mm +\$599

UPGRADE SPECIAL

◊ CPU Processor	\$279
◊ Pentium Motherboard w/ 512K	
◊ 32 MB Fast EDO RAM	
◊ PCI MPEG Video Card w/2MB	
AMD K6-233 MMX	\$279
Intel 200 MMX	\$315
Intel 233 MMX	\$329
PII 233 MMX	\$525 *
PII 266 MMX	\$559 *

*Upgrade including 19"ATX Case

SPECIAL

16-Bit Sound Card	\$17
Acer 32x int. CD-ROM Drive	\$75
Diamond Monster II 3D 8MB OEM	\$299
15" SVGA Monitor, .28mm	\$209
Mustek Color Flatbed Scanner (* After Rebate US \$30)	\$79*
Fujitsu 3.2GB Ultra DMA H.D.	\$185
Fujitsu 4.3GB Ultra DMA H.D.	\$269
Quantum 6.4GB Ultra DMA H.D.	\$259
USR 56K int. voice Fax Modem	\$119
Matrox Mystique II PCI 4MB	\$125
NEC Zip 100MB int. IDE Zip Drive	\$119
Iomega Ext. Jazz Drive (Demo)	\$335
Adaptec 2940U SCSI Adapter	\$199
Intel Ether Express Pro 100 (100BT)	\$79
# HP 722 Color Deskjet Printer	\$379
# MS Windows 98 Full Version (# with system purchase only)	\$129

DeskJet 890C

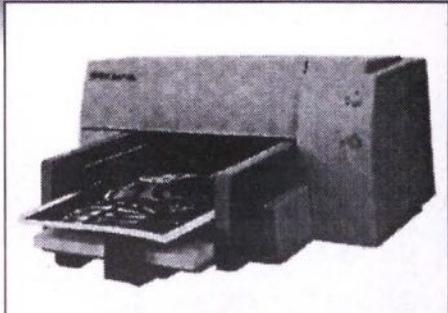
- 600 x 600 dpi
- Smallest ink drops for more shades of color with Photo RET II
- Up to 9 ppm output
- Print media from plain paper to banners and iron-on transfers
- 1 year warranty



\$ 525

DeskJet 692C

- 600 x 600 dpi
- Resolution Enhancement
- Up to 5 ppm output
- Print media from plain paper to banners and iron-on transfers
- RealLife Imaging System
- 1 year warranty



\$ 295

Color Printers

Monitor

SVGA 14", .28 mm	\$165
SVGA 15", .28 mm	\$219
Acerview 15" 54e, .28mm	\$255
Acerview 15" 56c, .28mm	\$269
Acerview 17" 76e, .28mm	\$399
Acerview 17" 76c, .27mm	\$429
Acerview 17" 78c, .26mm	\$499
Sony 100ES 15".25	\$405
Sony 200ES 17".25	\$699
Optiquest 15" Q51	\$249
Optiquest 17" V773-2 .26	\$489
Optiquest V775 .26	\$569
Viewsonic 17" G773	\$649
Viewsonic 17" P775	\$685
Viewsonic 17" E771	\$479

Hard Drive

3.2 GB Ultra IDE HD	\$195
4.3 GB Ultra IDE HD	\$225
6.4 GB Ultra DMA HD	\$269
Quantum Ultra 2.1 GB	\$189
Quantum Ultra 3.2 GB	\$199
Quantum Ultra 4.3 GB	\$229
Quantum Ultra 6.4 GB	\$279
Quantum Ultra 8.4 GB	\$389
Western Digital 2.5 GB	\$195
Western Digital 3.1 GB	\$205
Western Digital 4.3 GB	\$259
Western Digital 6.4 GB	\$279
Western Digital 8.4 GB	\$399

Multimedia

Acer 32x CD ROM	\$85
Acer 36x CD ROM	\$95
Panasonic 24x CD ROM	\$79
Toshiba 32x CD ROM	\$99
SB comp sound card	\$17
Sound Blaster 16 PnP	\$49
Sound Blaster 64 AWE	\$95
Sound Blaster 64 PCI	\$129
S. Blaster AWE 64 Gold	\$189
Creative DVD Encore Kit	\$289
Toshiba DVD Kit	\$279

Modem

33.6 Int. Voice Fax	\$59
56K int. Voice Fax	\$69
Flex 56K int. VoiceFax(PCI)	\$89
Motorola 56.6 Int. Fax	\$135
USR 33.6 Int. Voice	\$109
USR 56.6 Int. Voice	\$125
USR 56.6 Int. Voice V90	\$169

Misc.

Adaptec 2940U	\$199
HP SureStore 7200i	\$529
HP SureStore 7200e	\$659
Yamaha 4260i	\$885
CDR Disk	\$2.9
Intel 10/100 Bt NIC Kit	\$79
3Com 3C905 PCI	\$85
3Com 3C509 ISA	\$135
PCI PnP Ethernet	\$29
CNet 9-Port Hub	\$109
120MB Floppy (w/ 100MB Disk)	\$145

Printer

Brother HL 730dx Plus	\$365
Brother HL 760dx Plus	\$465
Canon 250 Color	\$185
Canon 4300 Color	\$245
HP 692C Color Inkjet	\$295
HP 722 Color Inkjet	\$399
HP 890C Color Inkjet	\$525
HP 1120CXi Color Inkjet	\$629
HP 6L Laser printer	\$515
HP 6P Laser printer	\$975
HP 4000 Laser printer	\$1595
HP 4000N Laser printer	\$1995
HP 5 Color Laser printer	\$5500
HP 5M Color Laser	\$6995

Video Card

Trident ISA 1MB	\$59
SiS PCI 2MB	\$39
S3 DX VIRGE PCI, 4mb	\$49
ATI 3DXpression, 2mb	\$65
ATI 3DXpression, 4mb	\$85
ATI All-in-Wonder Pro, 4mb	\$305
ATI Xpert@work AGP, 4mb	\$119
ATI Xpert@play AGP, 4mb	\$145
Diamond 3D AGP w/ 4mb	\$89
Diamond Viper AGP, 4MB	\$159
MGA Mystique II, 4m	\$139
MGA Millenium II, 4m	\$235
Matrox Productiva AGP, 4m	\$109
Matrox Productiva AGP, 8m	\$129

Backup Device

Zip Drive Ext. 100 MB	\$189
Zip Drive Int. IDE, 100MB	\$129
Jazz Drive Int. SCSI, 2GB	\$639
Syquest Sparc Drive, 1GB	\$299
Zip Disk 100 MB x 1	\$16
Sparc 1 GB tape	\$49

Motherboard

Pentium motherboard/512K	\$89
ASUS SP9+ Pentium/512K	\$109
ASUSTXP4 Pentium//512K	\$139
ASUSTX97 Pentium/512K	\$165
ASUS Pentium II P2L97	\$169
ASUS Pentium II P2B97	\$219

Peripherals

Logitech 2-button Mouse	\$19
Logitech Mouseman	\$27
90W Speakers	\$15
320W Speakers	\$55
Yamaha M7 Speakers	\$69
GNT 500 Speakers	\$55
Altec Lansing ACS 45	\$105



**Netlink
Computers**

System 1 (PCI)

**AMD K6 CPU
MMX233**

\$868

Lease
\$28/Month
Financing Also Available

- 32MB 10ns SDRAM, 512K, TXPro
- 3.2GB EIDE Hard Drive, Mode 4
- 3.5" 1.44MB Floppy Disk Drive
- PCI 64Bit Video Accelerator, Support Full Screen MPEG
- 14" Monitor N.I.L.R, 1024x768, .28 dp
- 15" Mini-Tower Case 230W
- 3B Mouse & Pad
- 104 Win95 Keyboard
- 32X EIDE CD-ROM Drive
- 16Bit Full Duplex 3D Sound Card
- 100W Multimedia Speakers
- 33.6K Modem w/SpeakerPhone
- 2 Year Parts & Labour Warranty



OPTIONS:



CYRIX MMX-233	\$838
INTEL MMX-233	\$923
AMD K6 MMX-233	\$868
AMD K6-2 MMX-266	\$1030
AMD K6-2 MMX-300	\$1108

System 2 (PCI)

**Intel Celeron MMX
MMX266**

\$1208

Lease
\$39/Month
Financing Also Available

- 32MB 10ns SDRAM, ATX, AGP, USB
- 4.3GB UltraDMA Hard Drive, 33MB/s
- 3.5" 1.44MB Floppy Disk Drive
- Diamond Stealth 4000 AGP 4MB Full Screen MPEG
- 15" Monitor N.I.L.R, Digital Control, 1280x1024, .28dp PnP
- 17" ATX Med-Tower Case 230W CSA
- Logitech 2B Mouse
- 104 Win95 Keyboard
- 32X EIDE CD-ROM Drive
- PCI 64 Voices Full Duplex 3D Sound Card
- 100W Multimedia Speakers
- 56K ASVD Voice Modem FDX V.90 Ready
- 2 Year Parts & Labour Warranty



OPTIONS:



INTEL CELERON MMX-266	\$1208
INTEL PENTIUM II MMX-233	\$1290
INTEL PENTIUM II MMX-266	\$1359
INTEL PENTIUM II MMX-300	\$1518
INTEL PENTIUM II MMX-333	\$1668

System 3 (PCI)

**Intel Pentium II MMX
PII-266MMX**

\$1598

Lease
\$52/Month

Lease Base on 36 Months, 10% Buy Out

- 64MB 10ns SDRAM, 512K, 440LX, AGP, USB
- 6.4GB UltraDMA Hard Drive, 33MB/s
- 3.5" 1.44MB Floppy Disk Drive
- Matrox AGP G-100 3D Productiva 8MB or ATI AGP Xpert 98 3D 8MB
- 15" Monitor N.I.L.R, Digital Control, 1280x1024, .28dp PnP
- 19" Med-Tower Case ATX 250W CSA
- Microsoft 3B IntelliMouse (NEW)
- 104 Windows95 Keyboard
- 36X EIDE CD-ROM Drive
- A3D PCI 64 Voices Full Duplex 3D Sound Card
- GNT-5000 Speakers w/Subwoofer & MIC
- 56K ASVD Voice Modem FDX V.90 Ready
- 2 Year Parts & Labour Warranty



OPTIONS:



INTEL CELERON MMX-266

\$1453

INTEL PENTIUM II MMX-233	\$1540
INTEL PENTIUM II MMX-266	\$1598
INTEL PENTIUM II MMX-300	\$1768
INTEL PENTIUM II MMX-333	\$1950
INTEL PENTIUM II MMX-350	\$2243
INTEL PENTIUM II MMX-400	\$2568

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Fujitsu	3.2GB	10ms	5400	256k	UltraDMA	\$188
Fujitsu	4.3GB	10ms	5400	256k	UltraDMA	\$218
Fujitsu	6.4GB	10ms	5400	256k	UltraDMA	\$268
Western Digital	3.2GB	10ms	5400	128k	UltraDMA	\$212
Western Digital	4.3GB	10ms	5400	256k	UltraDMA	\$228
Western Digital	6.4GB	10ms	5400	256k	UltraDMA	\$288
Western Digital	8.4GB	10ms	5400	256k	UltraDMA	CALL
Quantum	3.2GB	10ms	5400	128k	ST UltraDMA	\$199
Quantum	4.3GB	9ms	5400	128k	SE UltraDMA	\$219
Quantum	6.4GB	10ms	5400	128k	ST UltraDMA	\$278
Quantum	6.4GB	9ms	5400	128k	SE UltraDMA	\$288
Quantum	8.4GB	9ms	5400	128k	SE UltraDMA	\$435
Seagate Medalist	6.4GB	10ms	5400	256k	UltraDMA	\$268
Seagate PRO	6.4GB	9.5ms	5400	512k	UltraDMA	\$289
Seagate PRO	6.5GB	9.5ms	7200	512k	UltraDMA	\$368
Seagate PRO	9.1GB	9ms	7200	512k	UltraDMA	\$519
Maxtor	4.3GB	10ms	5400	256k	UltraDMA	\$219
Maxtor	6.4GB	10ms	5400	256k	UltraDMA	\$275
Maxtor	7.2GB	10ms	5400	256k	UltraDMA	\$299
Maxtor	7.5GB	10ms	7200	256k	UltraDMA	CALL
Maxtor	8.4GB	9ms	5400	256k	UltraDMA	\$399
Maxtor	11.5GB	9ms	5400	256k	UltraDMA	\$468



FUJITSU

Western Digital

Quantum

Seagate

Maxtor

SCSI-2/ULTRA WIDE HD

Seagate	SCSI3	4.5GB	9ms	7200	512k UW UW-MEDALIST	\$468
Quantum	SCSI3	4.5GB	8ms	7200	512k UW U2W-VIKING II	\$499
Quantum	SCSI3	2.2GB	8ms	7200	512k UW UW	\$329
Quantum	SCSI4	2.1GB	9ms	7200	512k FW FW	\$249



pentium® II

IBM

ASUS

CPU

MHZ	200	233	266	300	333	350	400
Pentium MMX	\$155	\$179					
PII Celeron						\$188	
Pentium II MMX			\$268	\$328	\$468	\$638	\$788
AMD K6 MMX	\$109	\$128					
AMD K6-2 3D						\$199	\$279
CYRIX/IBM MMX	\$88	\$98	CALL				
CYRIX/IBM MII			CALL	CALL			

RAM

Memory Type	4MB	8MB	16MB	32MB	64MB	128MB
Regular 30pin	\$13					
Regular 72pin Fast Page	\$15	\$22	\$25	\$49	CALL	
Regular 72pin w/Parity	\$25	\$38	\$49	\$78	CALL	
EDO 72pin	\$15	\$19	\$25	\$45	\$188	
SDRAM 168pin			\$39	\$45	\$109	\$198
PC100 SDRAM 168pin				\$68	\$129	\$248
ECC SDRAM					CALL	CALL

MOTHERBOARD

Abit AX5 ATX /TX5 AT/LX6 PII ATX	\$129/139/165
Abit BX6 Pentium II PC100	\$219
ACER AX59PRO SUPER 7 100MHz	\$138
ASUS P2B 440BX PII PC100/ P2BS/P2BDS	\$238/428/598
ASUS P2L97 / P2L97S	\$179/328
ASUS SP97-V with Video built-in	\$118
ASUS SP98-AGPX ATX 512K / 1M 100MHz	\$139/148
ASUS TX97 / TX97E 512K TX97X / TX97XE 512K	\$168/179
ASUS TX97L 512K Smart Motherboard AT	\$168
ASUS TXP4 512K AT / TXP4X ATX	\$139/175
LuckyStar SUPER 7 512K 100MHz AT	\$118

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Top Brand Notebooks

AT ROCK BOTTOM PRICES



Manufacturer	Model	CPU	MEM	HDD	CD	Display	Modem	Price
ACER	393C	166MMX	32MB	2.1GB	20X	12.1DSTN	33.6K	\$1689
ACER	7364TE	PII-266	64MB	4.0GB	20X	13.3TFT		\$5505
Compaq	1592DMT	233MMX	32MB	3.1GB	20X	12.1TFT		\$4120
Compaq	4220T	266MMX	32MB	4.0GB	20X	12.1TFT		\$4525
Compaq	7790DMT	233MMX	32MB	5.0GB	20X	13.3TFT		\$6020
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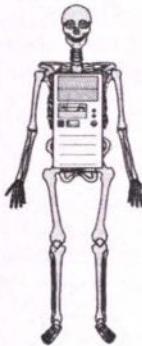
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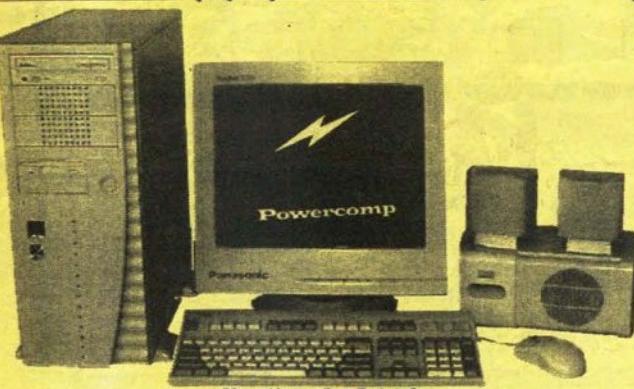
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- 32x CD ROM drive - Panasonic
- 32 wavetable 3D stereo sound - Shark
- Two amplified shielded speakers
- Windows '98 include 2CDs and manual
- Top of the line medium tower - ATX
- 5yr warranty - 3yr parts & 5yr labour
(NOT a Celeron system)

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- 8MB AGP 3D Video card - Intel
- 104 win'95 keyboard - Fujitsu
- MS intelli-mouse & pad
- 1.44 floppy - Fujitsu
- 56k full duplex speakerphone modem - Shark
- 32x CD ROM drive - Panasonic
- 32 wavetable 3D stereo sound - Shark
- Two amplified shielded spkrs
- Windows '98 - include 2CDs and manual
- Top of the line medium tower case - ATX
- 5yr warranty - 3yr parts & 5yr labour

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- 104 win'95 keyboard - Fujitsu
- 1.44 floppy - Fujitsu
- MS intelli-mouse & pad
- 56k full duplex speakerphone modem - Shark
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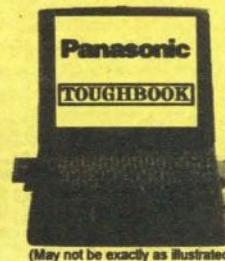
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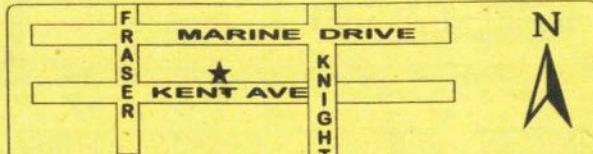
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Windows 98 hits the shelves

By Craig Menefee and Jeff Evans

SAN FRANCISCO (NB)—After not much buildup to speak of, Microsoft Corp. rolled out Windows 98 in late June to only a small flurry of related announcements from software and hardware vendors. The excitement level rose to what one observer characterized as "mild interest," although some major retail chains were reported to have drawn crowds at midnight when it became officially okay to sell the upgraded operating system (OS).

Microsoft Windows 98

The official launch took place Thursday June 25 at 4 p.m. in San Francisco. A simultaneous live Webcast of the talks by Microsoft chief executive officer Bill Gates and vice-president of marketing Brad Chase, was hosted on the Microsoft Web site, conducted by rich-media Internet pioneer InterVU Inc. InterVU said it managed the feed from dedicated delivery centres distributed across nine Internet backbones.

Meanwhile, at a briefing in Toronto, Neil Frogatt, Windows marketing manager for Microsoft Canada outlined the advantages of Windows 98. The new version of Windows is aimed to improve integration with the

Internet, allow users to work more easily and quickly, enhance multimedia, games and "convergence," and make it easier to add software and peripheral hardware to users' computers. According to Frogatt, "The beauty of Windows 98 is that it runs applications faster and easier than Windows 95, while unlocking a whole new range of hardware devices and entertainment capabilities for consumers."

Frogatt described a broad base of local PC end-user enthusiasm for Windows 98, ranging from the thousands of Canadians who participated in the Windows 98 beta testing program, to the lineups of PC enthusiasts who showed up at "Midnight Madness" events at retail software outlets across the country to buy their copies of Windows 98 upgrades right after midnight on the morning of June 25.

In response to questions, Frogatt claimed new computers with Windows 98 would be on sale immediately, and that Microsoft expected the rate of Windows 98 sales to equal the rate of sales of Windows 95 at its launch. Frogatt claimed in a statement that "Windows 98 is catching fire among the PC enthusiasts." Microsoft has been very active in its negotiations with PC makers, ensuring that all significant Canadian vendors will have Windows 98 available on new PCs from the beginning of its official release.

One damper on the ardor of business buyers and much of the computer press was that Microsoft itself told business users not to

bother with Windows 98, but rather to upgrade to Windows NT 4.0. Another was the continuing legal controversy over, what some say is, a Microsoft tendency to make other people's good ideas into part of its own OS, blocking effective competition.

Whatever the complete reasons, Microsoft has been forthright about not spending hundreds of millions of dollars to promote Windows 98 the way it did for Windows 95. For the 1995 launch, the firm licensed the Rolling Stones' *Start Me Up* as a kind of theme song for the occasion.

It has been widely predicted that Microsoft will abandon its Windows 98 OS format altogether before long in favor of NT. Some pundits even characterize Windows 98 as a collection of bug-fixes that should have been released years ago at no charge to users.

Microsoft puts a different spin on its recommendations to businesses to stay away. The firm describes Windows 98 as its first consumer-oriented OS. Among other non-business features, its graphics are more tightly bound to the OS for use with games and other such applications. Also, it lacks the kind of administrative controls needed by a corporate information systems (IS) department. So it never really was intended for business use at all, according to that version.

Downplayed or not, a one-day, worldwide rollout of a single product is expensive, and it commands attention. The new OS became

available at midnight at the International Date Line and followed the hour around the globe as Windows 98 boxes hit retail shelves, in 30 languages, in more than 40 countries. It was stocked in more than 12,000 retail outlets in North America alone, Microsoft said.

Where Microsoft goes, pretty much everyone else goes along. Microsoft says more than 200 PC vendors—including the top 25—were scheduled to ship Windows 98-based consumer within 30 days, covering around 90 percent of all newly shipped PCs when the shift-over is done.

Will the rollout succeed to the degree that Windows 95 did? Probably not, say analysts. Microsoft itself predicted sales below Windows 95's initial levels but above Windows 95's second year, and analysts at International Data Corp. said that prediction felt about right.

In the meantime, there were reports of "consumer madness" in some cities like Dallas, but the excitement was generated more by free promotional giveaways and specials than by the advent of Windows 98.

When all is said and done, one analyst told Newsbytes, the conversion to Windows 98 will probably happen the same way it did from Windows 3.1 to Windows 95. Most consumers won't bother to upgrade and the market takeover will occur mostly because new machines will come with Windows 98 already installed. □

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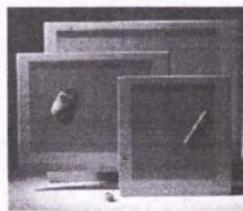
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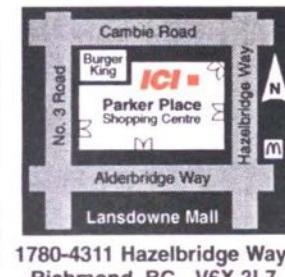
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Intel P233MMX	698
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 Logitech 2B Mouse + Pad
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 Acer FX-3D 16 PnP
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 33.6K Voice Fax Modem

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K6-II-300	1288
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In brief

Oracle database for PalmPilot

BOSTON (NB)—Oracle Corp. and 3Com Corp.'s Palm Computing have announced plans for the first database to run directly on a handheld computer.

Vice-president Denise Lahey, said Oracle will initially produce a PalmConduit for its Oracle Lite mobile computing database, to be followed next year by a "full-featured" edition of Oracle Lite for 3Com's PalmPilot and Palm III organizers, as well as for Palm Computing platforms from IBM and Symbol Technologies.

The technology will initially allow for sharing of database information between a handheld PC outfitted with a Palm Conduit (scheduled for release in August) and a notebook or desktop PC running Oracle Lite. The subsequent "full-featured" edition will add the ability for real-time database synchronization and replication between a handheld PC and either a notebook running Oracle Lite, or Oracle's "big" database, according to Lahey.

Oracle <http://www.oracle.com>

3Com <http://www.3com.com>

HP Kayak family grows

MISSISSAUGA—Hewlett-Packard Canada Ltd. has introduced three new HP Kayak PC Workstation models, which feature new HP-developed technologies. These new systems will be powered by 350 MHz and 400 MHz Pentium II processors, and the Intel 440BX AGPset with 100 MHz front-side bus. HP says they will provide superior performance, upgradability, and scalability for performance-driven PC workstation customers. The new models are the XA-s, XU, and two XW systems.

The new HP technologies used in the Kayak line are: HP MaxiLife an embedded monitoring system with LCD display for management of key system components; HP TopTools desktop management interface (DMI) PC-management software for advanced system and network diagnostics; HP FastRAID a SCSI subsystem that uses RAID technology to improve system performance during disk-intensive operations; and HP UltraFlow a system for keeping critical components cool.

HP <http://www.hp.com/go/kayak>.

Kayak Web support expands

MISSISSAUGA—In conjunction with the new Kayak models, Hewlett-Packard Canada introduced new support capabilities for all Kayak Workstation customers. The enhancements will allow customers to access and download technical information without calling a special hotline. According to HP, the new features include easier site navigation; more technical content; more advanced, proactive notification of new information posted on the Web site; online and downloadable product manuals in available local languages; and the ability to view new content before downloading software.

HP <http://www.hp.com/go/kayak>.

Infowave, Lexmark ink deal

BURNABY—Infowave Wireless Messaging Inc. has announced an agreement with Lexmark International that will see Infowave create and supply a customized printing solution to enable the Lexmark Optra E+ printer to be compatible with Macintosh computers.

Continued on page 2

THE COMPUTER PAPER'S

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Tech Enterprise

TECHNOLOGY SOLUTIONS FOR BUSINESS IN CANADA

AUGUST 1998

Doing business with the government

Are you interested in selling products or services to the Canadian federal government, but don't know where to begin? Or, perhaps you've tried but got lost in a sea of paper, a world of confusing jargon and difficult processes, and gave up. You're not alone.

By Michelle Schoffro and Curtis Cook

Many Canadians who run small businesses are walking along the same path when it comes to doing work for the government. But, for some companies, finding a way through the confusion and learning how government works is the key to success.

Adam Jasek, president of Ottawa-based AJJA Information Technology Consultants Inc., built a company that brings in \$25 million worth of business every year because of his interest in working with the federal government. Says Jasek, "You need a lot of patience and you need a lot of perseverance. Obviously, you have to be skilled. But, just because you're skilled doesn't mean you're going to get the work. It takes time." Jasek started AJJA in 1980 and, realizing the tremendous size of government, decided to focus his efforts there. And, it paid off.

From its humble beginnings less than 20 years ago, AJJA now employs 200 people and offers expertise in project management, development of client server and Web systems, technical coaching, and finding solutions for the Year 2000 (Y2K) problem. The company is also an authorized reseller of software for developing systems.

Continued on page 2



Strategis a storehouse of business info



If you haven't checked out Strategis, Industry Canada's online warehouse of business and consumer resources, you could be missing out on free information that is critical to your company's success.

By Adriana Barton

So says Industry Canada, developer of Canada's largest online collection of commerce-related data. Launched in March 1996, Strategis contains more than two million documents and is an exhaustive source of information for businesses, according to Tim Garrard, chief information officer of Industry Canada.

Small and medium-sized enterprises

Continued on page 10

Doing business with Government*Continued from page 1*

Jasek says about 60 percent of his business is with the federal government and he would like to see that grow.

"A lot of contracts come through [MERX]. The process is heavily driven by that technology. You have to understand how to bid on [government projects] but at the same time you have to prove to a client that you've done your homework in advance."

Developed and operated by Cebra Inc., the Bank of Montreal's electronic commerce company, MERX is an Internet-based bidding system used by the federal and several provincial governments and other public-sector institutions. MERX is just one of ways the

"The whole bidding style is quite different. It's a completely different process selling to government. Also, usually when you're dealing with private industry there are a lot fewer people involved."

—Craig Honegger, Precise Software

federal government is attempting to standardize and simplify the procurement process.

The Canadian Federation of Independent Business (CFIB), which represents the interests of Canada's small business community, has been lobbying for years to cut the red tape and reduce the amount of documentation businesses are required to provide before the government will come to the table. More than two-thirds of CFIB members surveyed said they found the amount of paperwork needed to bid on government contracts too time-consuming and costly.

In response, a forum of Treasury Board and private and public sector representatives have been trying to reduce the paper nightmare for small businesses. Over the last year, they reported cutting 55 percent of the paperwork burden. This red-tape reduction not only aided the bidders, it saved the government millions of dollars as well. The Treasury Board has also established an ombudsman to review small business concerns.

In another streamlining effort, Public Works and Government Services Canada—the federal purchasing organization responsible for outfitting most departments with everything from office supplies to computer programming services—recently set up a group called Contracts Canada, which gives small businesses a "single window" to access information on government contracts.

On its Web site (<http://www.contractscanada.gc.ca>), you can find information on what goods and services the federal government buys, who it buys from and how it

spends its money. Through this site, you can also link to and search the MERX database.

Even with all the changes, many companies still prefer to work with business instead of government. Says Craig Honegger, vice-president of Precise Software Technologies Inc., "We actually prefer to deal with private industry because there's less bureaucracy, less red tape. It can be very slow dealing with the government."

Honegger adds that speed is not the only issue. "The whole bidding style is quite different. It's a completely different process selling to government. Also, usually when you're dealing with private industry there are a lot fewer people involved."

Since 1989, Precise Software has been developing operating systems called real time operating systems for technology products, including amplifiers that prevent speakers from blowing during stadium rock concerts, satellite paging systems, and operating systems for Formula 1 race cars.

With that type of technology, it's important to talk to the customer and explain the merits and processes of the technology, Honegger explains. "In the private sector there's a lot of interaction between the customer and the vendor. There's more of a dialogue with the customer. Whereas with the government you tend to submit these proposals and you either win or you don't win. You never really get a chance to explain the merits of the technology."

His sentiments are common.

Kevin Higgins, FreeBalance Inc. president and chief executive officer, says, "Dealing with the federal government has been very good [for FreeBalance]." But he understands the frustration of some companies. In many ways the government has been trapped by its own procurement procedures. He suggests if you want to do business with the government, "You have an up front investment in time and effort to learn how to market to them. But if you do have products that are relevant to government and you're willing to take the time and effort to understand government and how it buys, and market at the departmental level, you can build up a very substantial business with a customer who is very loyal."

FreeBalance provides financial systems to public service organizations worldwide, yet its focus has been mostly on the Canadian federal government. Adds Bruce Lazenby, vice-president of business development at FreeBalance, "People need to understand that although the government is working toward a business-like way of working, they are not business. They have a whole different reality and they need to have a whole different reality. By virtue of the fact that they are spending taxpayers' money, they have an obligation to taxpayers."

He says, "Most vendors listen for about half the time they need to and then say, 'Man, this is just too complicated' and they either try to circumnavigate the process or they just go and sell to the private sector where they can make a sale with less effort."

Higgins adds, "You really have to decide if government is part of the economy that you want to sell to. You have to organize your

ply a private-label Mac Connectivity solution that will include a CD-ROM, cable, manual and packaging that will be bundled with the Optra E+ printer for sale to Mac users.

"Infowave is very actively involved in expanding the number of quality printing solutions available for Mac users," said Bijan Sanii, general manager of Infowave's imaging division.

Infowave <http://www.infowave.net>

Lexmark <http://www.lexmark.com>

marketing and sales efforts to understand how the departments are organized, who the people are, and build those relationships. And only then does business start to happen."

The Canadian federal government spends more than \$8 billion each year, so there are many opportunities for small business operators who want to take the time to understand government and market to them.

With the measures taken by the federal government to date, there seems to be recognition that the procurement system isn't perfect and a commitment to improve it.

"People need to understand that although the government is working toward a business-like way of working, they are not business"

—Bruce Lazenby, FreeBalance

Alfonso Galgiano, minister of public works, has said recently measures to improve access to federal contracts for small- and medium-sized businesses is a government priority.

Improvement is especially an issue in the high-tech world. To this end, the federal government has developed what it calls benefit-driven procurement (BDP), which could have a dramatic impact on smaller computer hardware and service companies. BDP falls under common purpose procurement (CPP), a new form of planning and implementation for government projects in most industries.

The BDP process allows those assessing the bids to look beyond the bottom line. They can consider the abilities of the bidders to manage and complete a project, making cost of secondary importance.

Factors other than cost are particularly important in the high-tech industry where everyone knows cheaper isn't necessarily better. The more complex the technology, the more factors other than specifications need to be considered. For example, two bidders may propose completely different technologies as solutions to the same problem. In a case like this, neither cost nor specifications would be the best place to start assessing the bids.

So, while things are improving for small companies looking to do business with the federal government, they're still not perfect. But for those companies with a fitting product or service, as well as the desire to sell to the government and the time required to learn how, the rewards can be great. Just ask AJJA or FreeBalance.

And there's no shortage of information available on how to begin doing business with the government. The best place to start is with your potential customer. Says Lazenby, "Speak to the purchasing officers. The people at Public Works and Government Services Canada will spend a lot of time explaining the process to you if you ask. They are very open and friendly." □

Netcom upgrades capacity

TORONTO—In an effort to accommodate growing customer demands, pave the way for enhanced services, and increase reliability, Netcom Canada has announced expansions to its nationwide Internet network.

The latest upgrade includes the addition of two DS-3 links connecting to Toronto-

Finding a balance

For Kevin Higgins, doing business with the Canadian federal government has been a slow and steady uphill battle. "We started with small contracts and provided quality services under those contracts," says Higgins, president and chief executive officer of FreeBalance Inc.

"We started [securing government sales] by doing seminars and inviting government people from all kinds of departments to come. We would present our systems and we'd make contact with many people. Gradually we built up relationships, then we built up [the business] from there." FreeBalance started in 1984, with revenues hovering at just around \$300,000. With perseverance and hard work, the company expects revenues near \$10 million this year.

Higgins has this advice for small businesses looking to sell to the federal government: it's a two-stage process. First, you must be "constantly out there marketing to the public sector." Then you get online and access MERX (the government's electronic tendering service) and bid on projects, filling out the request for proposal (RFP) documents.

"What you don't do is just wait for the RFP documents to arrive on your desk. If you're selling information technology hardware or software, the RFP is not where you start. You start by marketing and building relationships with people in government.

"A lot of the battles are won before the RFP ever hits the street."

FreeBalance provides what it calls, "mission-critical financial systems" for about 30 different federal departments, which accounts for about 60 percent of its overall client base. In fact, FreeBalance Financials, the company's software, is only sold to the public sector throughout the world.

Higgins explains why FreeBalance concentrates on the public service: "It's really because we felt a need to focus and provide a well-defined solution for customers." Balancing the Canadian federal government's needs with those of other public service clients worldwide has been a key to FreeBalance's success.

With the spectre of the Year 2000 (Y2K) problem, government departments have been in a rush to replace financial systems to avoid a potentially devastating crash at the dawn of the next millennium. Under standard procurement practices, replacing such a system would take between two and four years.

This dilemma is an opportunity for companies offering solutions to the Y2K problem, according to Higgins. And because of the time crunch, the opportunity is especially golden for companies that have nurtured relationships with federal departments.

In the past three months alone, FreeBalance has helped Statistics Canada, the Public Service Commission, the National Archives, Canada Labour Relations Board, and the Fleet Management Facility at the Department of National Defence make their financial systems Y2K-compliant.

Higgins adds that in those departments, "All the financial operations, financial management and budgets get managed on FreeBalance systems."

—Michelle Schoffro and Curtis Cook

In brief*Continued from page 1*

"We are very happy to partner with Infowave to extend the benefits of our award-winning Optra laser printers to Mac users," said Allen Westerfield, Lexmark marketing director.

The Optra E+ is a professional-quality personal laser printer for business or home applications. Infowave will develop and sup-

Continued on page 5

Contact: FreeBalance, <http://www.freebalance.com>

The rules of engagement

In one of my previous careers I co-owned a small printing business. About 30 percent of our annual revenue was from federal contracts. We always looked on this as a double-edged sword. On the one hand, a government contract was like money in the bank.



There was no fear of the customer going bankrupt, or of stiffing you with an NSF cheque. And bankers loved receivables backed by a government purchase order.

On the other hand, dealing with government purchasers required lots of patience, and lots of processing of forms and such. With just a few people to handle many tasks—a typical scenario for small businesses—we couldn't afford to devote as much time as we would have liked to pursuing other government work.

Although I'm now far from government contracting, people occasionally talk to me about doing business with government. Sometimes the talk strays to rumor and innuendo about how someone won a rich contract because he knew someone who worked with someone who was tight with the department's chief muck-a-muck. It's pork barrel, pure and simple.

There may be instances where this is the true state of affairs, but what drives this persistent and quite common attitude, I think, is resignation—and resentment—that smaller companies don't really have a chance to bid on those lucrative government contracts that get reported in the daily news.

If you are one of those people who has dismissed government as a potential customer, there are two reasons why you might want to reconsider your position. First, government is a huge purchaser of goods and services. Secondly, governments—particularly at the federal level—have taken steps to make the process more open and accessible.

Technology has played a big role in opening up government. The federal government's Strategis Web site, for example, is an ambitious project, and impressive in the scope of information it provides. In many cases, information that was very difficult to find is now available to anyone with a computer and Internet access. A lot of this information

won't deal specifically with how to win a government contract, but it will provide all sorts of strategic information from patent information to tips on exporting your product.

Actually getting a contract paid for by the public purse is another matter. For many businesspeople, government tendering remains a

time consuming process. Unfortunately, technology won't be of much help in reducing the number of hoops you'll have to jump through to secure a contract. However, new developments like electronic tendering systems will automate some of the paperwork and also provide a centralized source of information about

what government purchasers are looking for.

The business is there. You need little more than a computer and Internet account to find the leads.

David Tanaka,
Editor, Tech Enterprise



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Digicam built into Vaio laptop

TOKYO (NB)—Sony has unveiled a new notebook computer with built-in digital still camera at the recent Windows World Expo show in Tokyo.

The Vaio-505 was presented in prototype form at the exhibition and so details on specifications, launch date or price were unavailable. The machine demonstrated ran the Windows 98 operating system and featured a color liquid crystal display.



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In brief

Continued from page 2

Ottawa, and Toronto-Montreal. This is in addition to four DS-3 facilities connecting to the Internet through Network Access Points (NAPs)—the meeting points of Tier-1 Internet service providers (ISPs).

"We pride ourselves on bringing Tier-1 ISP benefits to our customers," said Gord Waites, Netcom Canada's vice-president of operations and development. "Rather than having an upstream provider connecting us to the Internet, we connect directly to the Canadian NAP; and through the ICG Netcom U.S. ATM backbone, we are directly connected to all six U.S. NAPs."

Netcom Canada <http://www.netcom.ca>

PCBacker for small business

SAN JOSE, Calif. (NB)—Sony Electronics has announced a PCBacker series of tape storage devices to provide backup protection for standalone computers in a SOHO (small office/home office) up to a mid-sized networked office environment. The firm said the system is compatible with DOS, Windows 95 and NT, NetWare and OS/2.

"Sony has backup devices for everyone. You have storage choices from 4 GB to 50 GB

native [uncompressed data], more if you get an autoloader configuration," according to a Sony spokesperson. An autoloader cycles several tapes, depending on the version chosen, she added.

She said the low-end version of the digital data systems (DDS) storage devices, the DDS-2 can store 4 GB native or 8 GB compressed on a single tape. The DDS-3 can hold 12 GB or 24 GB, depending on whether the data is compressed or not.

For a mid-sized network environment, they offer AIT (Advanced Intelligence Tape), which can store 25 GB on a single uncompressed tape (50 GB compressed), and AIT-2 which can hold 50 GB (uncompressed) or 100 GB (compressed).

All PCBacker packages provide mounting accessories, backup and archival software from Computer Associates, and anti-virus software.

Sony <http://www.sony.com/storagebysony>

Bay Networks expands

TORONTO—Bay Networks Inc. has announced an agreement to acquire wireless local area network (WLAN) company Netwave Technologies, Inc. for approximately US\$10 million (U.S.). Bay Networks says the addition of Netwave's industry-standard

WLAN technology to its portfolio of products allows Bay Networks' enterprise customers to wirelessly connect the growing number of portable PC users to campus LANs, freeing workers from the constraints of their desktop connections while in the office.

Netwave Technologies is a leading developer of wireless connectivity products for portable PC users. The company shipped the first wireless LAN adapter fully integrated on a PC Card in 1995, and will be the first to ship products supporting both IEEE 802.11 specs for wireless LAN technology, direct sequence (DS) and frequency hopping (FH) spread spectrum.

PhoneLog upgraded

EAST PALO ALTO, Calif. (NB)—Hands High Software has released PhoneLog 2.0, a phone call management system for 3Com's Palm Computing platforms that run under the Palm 2.0 and 3.0 operating systems (OS).

Hands High president, Shannon Pekary, says, "The original PhoneLog program was very simple and people started using it in ways I didn't expect. We found people using the original PhoneLog to handle with their voice-mail messages and we used their feedback to build version 2.0."

"Our users are in two camps," he said, "they either save their voice-mail or write their messages on stickies and stick them on the monitor to call back later... PhoneLog is designed to help whole process. Busy users can jot down the message on their PalmPilot and have a record to look through quickly when they are ready to return calls."

Pekary said the new version includes a phone management system to track incoming and outgoing phone calls, a sorting feature to manage calls by project, category and type, an automatic address book update feature and a purge feature to remove calls that don't need storing.

It is available from Hands High for \$19.95, and registered PhoneLog users get free upgrades, the firm said. A trial version of PhoneLog can be downloaded now from the company's Web site.

Hands High <http://www.handshigh.com>

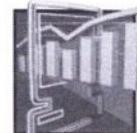
MetroNet launches ATM link

CALGARY (NB)—MetroNet Communications, a pioneering Canadian competitive local exchange carrier (CLEC), has announced completion of an asynchronous transfer mode (ATM) network linking five

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cities from Montreal to the West Coast. The network will provide broadband services to MetroNet's business customers, officials said.

MetroNet said the network, built of optical fiber, will connect Vancouver, Calgary, Edmonton, Toronto, and Montreal. MetroNet has local operations in all of those cities as well as in Winnipeg, Quebec, and Ottawa and is planning an expansion to three additional markets later this year, company officials said. The ATM network is also to be expanded before the end of 1998.

MetroNet launched local telephone service in competition with the incumbent telephone companies in Toronto, Calgary, and Vancouver on April 1 of this year, putting itself in the vanguard in a market that was opened to local competition by federal regulators at the beginning of 1998. It announced in May that it will be competing in the local market in Edmonton as well.

MetroNet, a Calgary-based firm that started by offering specialized voice and data communications services to businesses, has resold business services using incumbent telcos' facilities since late 1997.

MetroNet <http://www.metronet.ca>

Yahoo beefs up hosting

SANTA CLARA, Calif. (NB)—In order to expand its merchant services program, Yahoo said it bought privately held Viaweb Inc. for newly issued shares of Yahoo valued at about \$49 million.

Subject to a number of conditions, the acquisition is expected to be completed this summer. Despite this, Yahoo has already taken over Viaweb's Web site (<http://www.viaweb.com>), and converted it to a marketing-related site for a new offering called "Yahoo Store."

Yahoo's new e-commerce site—also at <http://store.yahoo.com>—offers merchants a complete Web setup, design, hosting and promotional service. Yahoo Store is based on the popular Viaweb Store service, and lets non-technical users create, publish and manage high-quality, secure online stores.

Retailers use a Web browser and a point-and-click interface to create their stores from their own location. They can also use the complete suite of tracking and reporting tools to gather data about traffic and income sources.

More than 1,000 businesses currently use Viaweb Store, including Dean & DeLuca, Frederick's of Hollywood, the Houston Astros, Rolling Stone, and Vermont Teddy Bear Company.

<http://www.yahoo.com>

PCs to leave centre stage

FRAMINGHAM, Mass. (NB)—The PC's status as the dominant device in the access portion of the digital marketplace will sputter to an end within six years, say researchers at International Data Corporation (IDC) in a new study. Further, the survey predicts that if vendors of PC-related technology do not jump into the connected appliance market soon, consumer electronic suppliers will.

At the end of the transition in 2004 or 2005, the study said, PCs will still have a growing market. But PCs will be dwarfed by demand for digital consumer appliances that have built-in connectivity and cost relatively little.

Gadgets like TV set-top boxes, World Wide Web-enabled telephones, Web-enabled personal digital assistants (PDAs) and Web-enabled video game consoles will drive a near tripling in the annual volume of access device shipments from 1997 to 2002, and exceed PC shipments by 2004 or 2005, the firm said.

Frank Gens, IDC's senior vice president of research, said "There's a rich irony here, in that very high volume, low-priced appliance models are taking off. The appliance model may do to the PC guys what the PC market did to the mainframe and mini guys."

Connected, low-cost devices will put a lot of demand on the network and specifically on servers, Gens said, and the major operating system (OS) vendors are already fighting to control the platform.

"If you look at Sun, they're betting heavily that Unix and Java will be better at running the new system than other systems," Gens said. "Microsoft is pushing hard to get Windows CE into as many appliances as possible."

"It could be that we're looking at the PC wars of 1977, '78, '79, and the real dominant platform may not show up for a few years."

<http://www.idc.com>

Xerox unveils 40 ppm printer

Xerox Canada unveiled its new line of print-

ers at the recent premiere of the *X-Files* feature film in Toronto. The star of the announcement was the DocuPrint N40 Network Laser Printer, which is capable of printing 40 pages per minute (ppm)—66 percent faster than Hewlett Packard's fastest office printer, Xerox claims. The N40 is priced at \$4,900.

Xerox claims it is leveraging its carefully conceived WorkSet technology, which features a consistent network interface, print drivers and utilities, to drastically speed up the innovation of higher performance products. It is partnering with document technology leaders Adobe, In-System Design and DigiInternational to offer "copier-like" features in its printers, including collating, sorting, offsetting, stapling, edge-to-edge printing, high-security printing, proof printing, transparency slip sheets, and a wide range of paper handling capabilities.

Also new to the N Series is the N17, a 17 ppm printer, priced at \$1,400. Both the N40 and N17 ship with a full suite of printer management service software for small and medium sized networks.—Jeff Evans

Xerox, Tel: 800-ASK-XEROX

<http://www.xerox.com>

ViewSonic's "office theatre"

ViewSonic has introduced the PJ820 LCD projector, which with a high-powered 759 ANSI lumens image brightness, offers what ViewSonic says are "super-bright, clear presentations, even in well-lit rooms." The PJ820 can project images up to 7.6 m (25 ft.), at a maximum resolution of 1,024x768, with a contrast ratio of 200:1.

The PJ820 weighs about 9.5 kg (21 lb.), and with an optional carrying case is easily portable, or with an optional ceiling mounting kit can be permanently installed. As well, it can be connected to VCRs, computers and audio systems simply, as it supports NTSC, S-Video, PAL and SECAM video formats. The suggested price of the JP820 is \$7,858.—Jeff Evans

Viewsonic Tel: 800-888-8583, 909-869-7976

<http://www.viewsonic.com>

Agents given pen PCs

Handheld pen computers—portable devices that typically run a full scale version of MS Windows or MS DOS from an internal hard

drive—have been overshadowed by the runaway success of the lighter 3COM PalmPilots and Windows CE-based palmtops. However, there is a substantial market for more full featured devices such as Fujitsu's pen computers, due to their ability to run regular Windows business applications, and their ease of integration with business networks. Common environments suited to this technology include hospitals, factories, and outbound sales or service operations.

Fujitsu Personal Systems, the market leader in handheld pen computers, has announced that Liberty Life Insurance has decided to equip its 1,200 member field sales force with Fujitsu Stylistic pen computers. They will be used with a suite of business software, including a customer information system, sales prospecting and rate calculation programs. The completely integrated hardware/software system has been named the PriorityPad, and each system comes with a modem and an HP DeskJet 340 portable printer. The system allows agents to upload information to the home office, and receive updated customer, policy and pricing information.—Jeff Evans

Fujitsu Tel: 800-831-3183, 408-982-9500

<http://www.fpsi.fujitsu.com>

IBM enhances WebSphere

IBM Canada Ltd. has announced enhancements to its WebSphere Application server that allow users to migrate from static "information only" Web sites to dynamic e-business-ready sites, capable of handling sales transactions online. IBM has bundled tools from Apache (the Apache HTTP Server) and NetObjects (the NetObjects ScriptBuilder) to add key elements to an e-business solution to users of the IBM WebSphere Application Server.

According to Tim Tevlin, market manager, e-business solutions at IBM Canada, Ltd., "Now Web site developers can take advantage of both Java programming and the scalability provided by WebSphere." The WebSphere Applications Server is available for MS Windows NT, IBM AIX (a flavor of UNIX), and Sun Solaris (another popular non-standard kind of UNIX), for \$1,121.—Jeff Evans

IBM Canada

<http://www.software.ibm.com/webservers/index.html>

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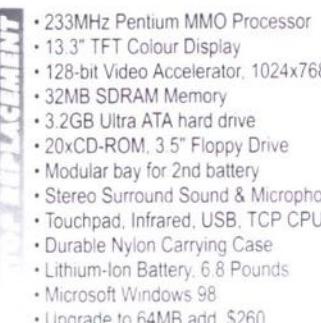
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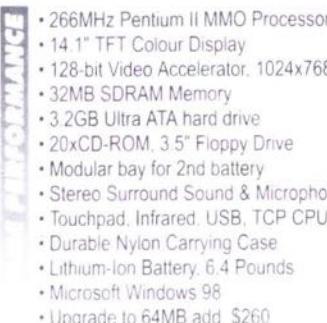
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ATI a world leader in PC graphics

By Geof Wheelwright

Highly successful Canadian computer companies are becoming more common on the world market. But Canadian high-tech firms that can establish and maintain global market leadership are

still pretty rare.

That's just one reason why you should know about Thornhill, Ont.-based ATI Technologies Inc., a computer graphics board manufacturer that is considered by many to be the world leader in this sector. In fact, ATI has done so well that at the end of April it was

ranked the number one worldwide vendor for 2D and 3D graphics accelerator add-in boards by market research group International Data Corporation (IDC).

IDC reported ATI shipped nearly six million add-in boards in 1997, making up about 30 percent of the total world market. And

IDC suggests ATI is well positioned to take further advantage of the market as it continues to grow over the next couple of years.

"The market for PC graphics accelerator add-in boards pushed through the 20 million mark in units shipped worldwide in 1997—a 54 percent year over year growth rate for 1995 to 1997," explained IDC analyst Edward Buckingham. "Moreover, IDC forecasts this market to continue growing to roughly 29 million units shipped in 2002. Much of this growth will result from upgrading the older PC for multimedia applications and enhancing the new low-cost PC from a basic function machine to a true multimedia system."

IDC predicts products for the PC graphics market will continue to evolve rapidly, with 2D acceleration giving way to advanced 3D capabilities, the introduction of innovations such as DVD playback, and the migration of multimedia applications to mainstream PCs

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K.Y. Ho: The man behind ATI

K.Y. Ho co-founded ATI Technologies in 1985 after immigrating to Canada, and has led it to its current status, as the top graphics hardware vendor in the world, according to an International Data Corp. report.

Ho, ATI's president and chief executive officer, has been identified intimately with his company, largely on the basis of a "Ho Knows" marketing and PR campaign in 1991. One of Ho's principal strengths has been to build a team of some of the best technologists in the world, based largely on the rich pool of talent in the southern Ontario region. Ho also has a very good feel for market trends and the demands of changing computer technology for ever-improving graphics and 2D and 3D capabilities.



ATI went through a difficult period around 1992-1993, when several leading-edge development initiatives went awry, leading to delays in product releases or cancellation of proposed products, particularly in the digital video segment.

However, under Ho's leadership, ATI staged a strong recovery. ATI dropped its sideline businesses in sound cards and modems, and concentrated on its core business building the market leading graphics processor chips and packaging them on high-quality cards.

—Jeff Evans

for both corporate and consumer use.

All of that, however, is not why ATI should be of interest to the average Canadian personal computer user. Patriotism only goes so far. Like consumers anywhere else in the world, the biggest draw to ATI lies in its technology and add-on products.

All in one

Probably the hottest ATI product for consumers right now is the ATI All-in-Wonder Pro board. It provides you with a built-in TV tuner, video capture capabilities, high-resolution graphics and a number of unique computer/TV features such as "instant replay" (achieved by recording a few seconds of a TV broadcast onto your hard disk).

To capitalize on the success of the All-in-Wonder Pro product, as well as the demand it expects from the recent release of Microsoft's Windows 98 operating system, ATI recently announced a series of product upgrades designed to take maximum advantage of Windows 98.

These products include a new version of the All-in-Wonder Pro, 3D, 2D, video accelerator and TV tuner that is now capable of "enabling" Microsoft's Web TV for Windows as well as providing video capture and TV-out display. In addition, ATI's more basic XPERT 98 board boasts 3D, 2D and video acceleration and 8 MB of SDRAM memory for the modest sum of \$98.

Meanwhile, ATI says its new XPERT@Play 98 board is designed for active Windows 98 game players and offers 3D graphics, 2D and video acceleration with TV out display (which ATI expects to be used for large-screen gaming) and a full 8 MB of SGRAM memory. ATI has designed all of these products for use with either Advanced Graphics Port (AGP) or the older PCI (Personal Computer Interconnect) add-on interfaces.

ATI appears to have high hopes for the All-In-Wonder Pro (or ATI-TV and XPERT series cards) as it says it will "fully enable" the Windows 98 WebTV for Windows feature. This will let you watch standard TV programs, as well as new interactive television broadcasts, on a Windows 98 PC.

Microsoft's WebTV for Windows, which is designed to provide access to both TV programming and Web content through cable hook ups, promises to further provide new features and functions such as Electronic Programming Guide, where viewers can view programming information on-screen. By entering their zip code and cable company, Microsoft pledges that WebTV for Windows users will be able to find out what programs are coming on, view information about those shows, and access any TV show with a single click.

On board from birth

Over and above all of these developments, ATI has also been able to take joy in the fact that PC manufacturers are increasingly opting to have ATI graphics technology built into their systems at the factory. And this should be good news for consumers, as it will eliminate the need—in some cases—to go out and buy add-on boards to get improved graphics performance.

In June, for example, both Dell Computer and arch-rival Compaq opted to use ATI

boards in their new PCs. Dell is using ATI's RAGE IIC chip in the new Dell OptiPlex G1 and E1 corporate computers to provide 3D, 2D and video acceleration to mainstream PCs and entry-level corporate systems.

Compaq, meanwhile, is moving in a slightly different direction by choosing ATI's

digital flat-panel accelerator board, the XPERT LCD, to power its new "digital-ready" Presario 5000 and 5100 series of home PCs. The unique thing about this deal is that it provides Compaq Presario 5100 and 5100 series systems with a digital interface to connect to a new breed digital flat-panel moni-

tors. It also supports existing "legacy" analog cathode ray tube (CRT) monitors, so that you can start with a CRT display on your new Presario and then upgrade later to a digital flat panel monitor without worrying about upgrading your display adapter. □

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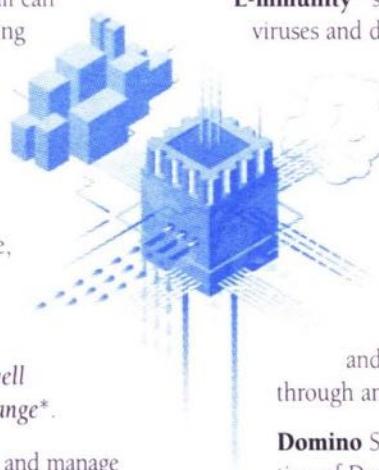
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Continued from page 1

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The bilingual Web site (at <http://www.strategis.ic.gc.ca/>) includes reports from economic departments in federal and provincial governments, studies prepared by independent market analysts, and research papers from major universities and company databases that can be accessed by commodity, industry and geographic location.

Businesses have access to information that wasn't publicly available before Strategis, including statistics extracted from confidential

tax documents, reports prepared by trade commissioners at Canadian embassies and source data from the United States Department of Commerce, the Central Intelligence Agency and governments in other nations.

"We're not a fun site. Anyone who comes back is motivated to spend time and spend their own money," Garrard says of business people who use Strategis at work.

"We see it as a big boon," says Marilyn Spindler, senior information specialist for CIBC business information services. She says Strategis is great for researching bankruptcy statistics, sources of financing and venture capital, but adds the site does not cover some

sectors, such as retail, very well.

"They do some good research in some areas, and in others they are quite blank," says Konrad Mauch, senior vice-president of technology for Statpower Technologies Corp., a Vancouver-based power-conversion equipment manufacturer. For example, he says, U.S.-based patent search engines are much better than those offered by Strategis. Mauch says he has used Strategis four or five times this year, mainly for market research and evaluating business opportunities. Mauch and Spindler both say Strategis is a good use of tax dollars.

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ness community, says Garrard. "We have volumes of testimonials from clients saying how helpful we've been."

Despite the sheer bulk of information available, locating specific data is relatively easy, thanks to a good organizational structure and the first-rate Help Desk. (I emailed a request for job creation statistics and within 12 hours I received detailed instructions for locating the information I needed on Strategis.)

Since documents and databanks often appear in more than one category, you are likely to run across choice information regardless of where you are in the site.

Organized for interaction

Strategis does more than house reams of information.

By electronically publishing consultation papers on matters such as the proposed bank merger of the Royal Bank of Canada and the Bank of Montreal, it supports and streamlines the democratic process. For example, visitors can read a Competition Bureau review, then put in their two bytes' worth using an email response form included with the documents.

The site also offers interactive services such as lobbyist registration, Contact's chat forums and online bankruptcy searches, the site's only

e-commerce feature to date. (Users pay the standard rates for this service by entering their credit card numbers. A bankruptcy search on one company costs \$8.)

The technical end of Strategis is equally sound, offering effective, low-tech solutions to common Internet-related nuisances. At the top of each page, for example, Strategis lists in descending order the title of each section you've accessed, starting from the main menu. Since each title is a hyperlink, you can quickly return to a previous section without having to wade through scads of document with your Back button or Go list.

The site takes a simple and intelligent

approach to privacy issues, as well. For instance, to register your company online, you not only choose a password, but type in a random question that you alone can answer. For example, your question could be "What is my dog's name?" and your answer could be "I don't have a dog."

The text-only option and the limited use of graphics makes Strategis-based documents speedy to retrieve and print. The technical staff respond promptly to technical glitches, such as incompatibility issues with newer browsers, by providing a link to download the optimal version for the site (and an apologetic note stating they are working on the prob-

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Navigating Strategis

The Strategis site (<http://www.strategis.ic.gc.ca/>) is divided into nine main sections, as indicated on the Main Menu and downloadable site map. Here's a sample of useful tools in each area:

Company information

- Federal Corporations Database** allows users to request information, such as the names of chief executives, on every registered company in Canada either by business name or number. It links to a large number of Canadian and foreign company directories.
- Canadian Company Capabilities** is a buyers' and sellers' connection service. You can search the database for companies offering the products and services you require, or register your own firm online (multimedia features let you add logos, video clips, email addresses and links to other Web sites).

International business opportunities, trade and investment

- Create customized market reports on countries around the world using the latest research from the U.S. Department of Commerce and the Central Intelligence Agency's World Factbook.
- Search **Investment Climate and Opportunities** for political environments by country, with information on investment climates and market research reports on sectors ranging from agriculture to wholesale. A search for Canadian multimedia industry, for example, yields 18 links to facts and comments from international players in the field.
- Take a **World View... Export your Services** offers tips on export skills, developing an export plan and entering foreign markets.

Business information by sector

- Contains industry profiles on sectors ranging from bio-industries and ocean technologies to aerospace and defence. Under "rubber," for instance, I learned the industry has a high level of ownership concentration. This was confirmed when I clicked on "statistics," selected the tire and tube industries and found that only 13 companies manufacture these products in Canada.

Micro-economic research and statistical analysis

- Contains discussion papers from institutions such as Carleton University and the Institute for International Economics in Washington, D.C.
- Has a monthly economic indicator report including an analysis of the Canadian stock market.
- Includes miscellaneous data, such as the financing of Canadian public companies over the past four years.
- Lets you email queries and comments to a specific report's author.

Business support and services

- SOS 2000 offers advice on how businesses can cope with the so-called "millennium bug."
- Information is provided on small business loans administration and steps to

growth capital.

- Sources of Financing:** clicking on Hire New Employee yielded a discussion of the pros and cons of applying for working capital, and a seemingly inexhaustible list of institutions offering this type of loan.

Technology, innovation and licensing

- Click on **Information Technologies Connections** page to learn more about Internet content issues such as copyright infringements, and liability issues relating to child pornography, hate propaganda and obscenity on the Web.
- Information is provided on Federal standards, regulations and licensing of technology.
- It includes a searchable database of Canadian patents.
- Learn who does what in Industry Canada regarding Spectrum, Information Technology and Telecommunications industries.

Consumer information

- Consumer Connect: Credit Cards Cost Calculator** helps you find out which credit card will charge you the least interest and fees, based on your use of credit. This links to the **Office of Consumer Affairs** page, which details the latest product recalls and fraud alerts.
- New Financial Service Charges Calculator** helps you compare service charges at major banks in Canada.
- Consumer Aware** gives advice on product labels and paying the right price at the cash register.

Human resources and training

- Information provided on youth employment programs.
- Student Connection Program** teaches how to increase your firm's online presence with the help of qualified post-secondary students.
- CONTACT! The Canadian Management Network** has links to more than 150 multicultural advisors and 1,500 small business support organizations, among others.

The marketplace:

services, laws and regulations

- Includes information on patents and copyrights.
- Has a searchable database of Canadian Trademarks.
- Offers comprehensive information on incorporating your business.
- Has an online lobbyist registration.

From the main menu...

- Help: FAQ** (frequently asked questions) section covers everything from Aboriginal Business Canada to the Year 2000 issue. Email the Help Desk to find specific information and get a response within one business day.
- Advanced Technologies Connection:** click on employment services to find out how to staff your company without paying a salary.
- Contact Us** includes a searchable telephone directory of Industry Canada employees.

—Adriana Barton

lem). Similarly, Strategis provides links to download Adobe Acrobat Reader on the pages that list documents created in PDF (portable document format).

The need to provide timely information packaged in a form businesses could use was the driving force behind the Strategis initiative, says Lucie DeBlois, manager of the department's Internet marketing unit.

Making it happen

The federal government had determined access to strategic information was crucial to the survival of SMEs, particularly those in the knowledge-based sectors of the economy, which together are the primary creators of new jobs in Canada, according to Industry Canada.

Feasibility studies began in 1994 during a period of fiscal restraint and dramatic changes in the global economy.

Consultation with Canadian SMEs confirmed relevant business information was difficult and time-consuming to locate. Also, there is a shortfall in key business areas. By the time businesses procured information through the traditional channels, the data was often out of date, or had arrived too late to factor into major decision-making processes.

As economic advisor to the federal government, Industry Canada had privileged access to a broad scope of economic and business data from a national and global network of experts, which made the department a natural for meeting information needs of SMEs.

Facing major cutbacks through the federal government's downsizing exercise, the department needed to streamline and improve its services to Canadian business while reducing costs. The Internet was the obvious solution.

The department drew up a business plan in early 1995, at which time the use of Internet to link Canadian businesses with a major federal department was an innovation and an "ambitious undertaking," Spindler wrote in her review of the site in the fall of 1996.

By leveraging technology, Industry Canada could cut red tape and eliminate the production, printing and distribution costs associated with brochures, reports, diskettes and faxes.

Prior to Strategis, the different information materials numbered over 5,000, according to Industry Canada.

Building a truly comprehensive site demanded an unprecedented level of cooperation between offices nationwide, resulting in the dismantling of the traditional fiefdoms and a major cultural shift within the department. "We needed to reengineer our thinking in becoming information providers," Garrard says. "Previously information wasn't as easily shared." The "democratization" of the department's managerial structures is a Strategis legacy that remains today, according to marketing manager DeBlois.

The effort required the skills of more than 300 employees, ranging from graphic artists and marketing professionals to lawyers, librarians, industry analysts and administrators. They were joined by more than 40 co-op students from Canadian universities, who visited companies to get them online and showed Industry Canada employees how to use the Internet.

The other major challenge was meeting the technological demands of such a large undertaking, including:

- bilingual interface screens and a bilingual Web authoring process that could be used by 500 non-technical business experts with no knowledge of HTML (hypertext markup language)
- a technical infrastructure capable of handling vast amounts of data
- powerful search tools and an intuitive navigational structure
- very large and fast online servers and an ATM (asynchronous transfer mode) backbone for speedy connection to the Internet
- a client services help desk
- technology to allow for online company registration and the use of interactive tools
- Lotus Notes-based servers to manage the authoring process and make it quick and easy to publish documents and keep the site current
- a firewall to protect the site against vandalism and computer viruses
- e-commerce tools capable of full encryption and authentication and the use of digital signatures
- feedback mechanisms, such as online survey forms and daily usage statistics, for assessing the project's success and identifying pitfalls such as broken links and poor coding

The direct cost of building Strategis was \$5.5 million, according to DeBlois. All costs were absorbed by the department internally, as are the annual maintenance costs of \$2 million.

The Strategis initiative made the department a significant employer of Canadian IT companies, including Blue Maple Information Technologies, Quantum Information Systems and Touchnet Canada.

says Bruce Daly, manager of technical development and operations for Strategis.

Launched in March, 1996, the Web site was completed in less than 18 months—an impressive accomplishment from a government standpoint. Normally, the federal government can't even complete a feasibility study in that period of time, said David Waung, director general of Industry Canada's strategic information branch, to another TCP writer last year.

A benchmark for other projects

The speed to market made the department a trailblazer for other departments, including Human Resources and Development Canada, and highlighted the importance of managerial change to meet the demands of an online world. Delegations from governments in Vietnam, Greece, Ukraine and the European Union have toured the Strategis headquarters to learn how to set up similar initiatives, according to Daly.

The number of new documents published—the site initially included 325,000—is proof of broad staff acceptance of the technologies involved in the department's electronic publishing venture, DeBlois says.

The information explosion has drawn thousands of new users to the site. Strategis has logged 2,425,000 visits and more than 25.5

"We're not a fun site.
Anyone who comes
back is motivated to
spend time and spend
their own money."

—Tim Garrard, Industry Canada

million document retrievals since its launch. So far, Strategis has been immune to computer viruses and has resisted attempts at penetration by hackers, according to Daly. As for service, Daly says the only times the system has been down for significant periods have been during scheduled down times for telecom servicing (which usually occur on weekends) and three-and-a-half days during the ice storm in February 1998.

Among the new features on Strategis are Take a World View . . . Export Your Services, which includes three sections of tools for assessing your company's export readiness, researching the market and developing an export plan, and delivering services to foreign markets.

Launched early this year, the Credit Cards Cost Calculator and Consumer Help Desk were designed to offer people advice on how to shop around for credit cards. Users can type in their monthly unpaid balances for each card, then find out the total annual charges.

Strategis stats

Stategis has exploded into a small galaxy of business and consumer resources since its launch March 26, 1996. Here are some facts and figures on Canada's largest business information Web site:

- Strategis has links to over two million documents.
- It connects over 60,000 business-related sites.
- Conversely, 2,343 Web sites point to Strategis.
- Approximately 8,000 visitors access the site each business day.
- Roughly 5,000 Strategis users subscribe to Headlines, which are weekly email bulletins of new or updated material (the week of June 12, 1998 included Top 10 Tax Tips for 1998 and The Automotive Competitive Review).
- Since its launch the site has had more than 2,425,000 visitors.
- In the same period, document retrievals from Strategis have totaled more 25.5 million.

Number trouble

Industry Canada's hit count for the number of visitors to the site may be inflated, since a ten-time visitor to the Web site would register as ten visitors rather than one.

"Well, it's probably true," said Tim Garrard, chief information officer for Industry Canada, in a recent interview. "The question of knowing how many distinct visitors as opposed to visits is a difficult one." For user feedback, he said Industry Canada relies heavily on ongoing focus group studies and electronic survey forms that periodically appear on the screen. (Note: the surveys obligingly disappear if you decide not to fill them in, I am happy to report.)—Adriana Barton

The two sections logged more than 2,000 hits in the first two weeks of operation, according to an Industry Canada report.

Garrard says Strategis will expand its electronic commerce capabilities to include services such as Competition Bureau submissions, patent licensing, federal incorporation and all forms of spectrum licenses. "The future plans are to continually refresh the documents we have," he adds.

But what about small businesses that don't

have computers? (They do exist. While preparing an employment Web site last year, I did a survey of businesses in New Westminster, B.C. [population: 50,000] and found 71 percent had five or fewer employees, and the majority didn't use computers.)

Individuals can access the Internet at one of the department's 271 community access sites throughout Canada, Garrard says, or request information from Industry Canada's network of Canada business service centres.

The department continues to produce some information materials in paper form, but he adds, "There's no doubt that our primary method of publishing is the Internet."

If knowledge is power, then Strategis is a good reason for business people to hook up to the Internet as soon as possible. □

Adriana Barton is a freelance writer and classically trained cellist based in Vancouver. She can be reached at adriana@intergate.bc.ca.

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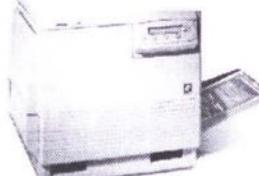
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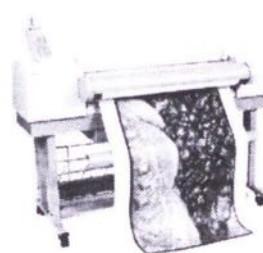
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Using MERX:

Electronic bidding 101

By Curtis Cook and Michelle Schoffro

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email or fax the user of any notices that meet their profile. The subscription also gives users access to a list of all the other registered users. Users can find out who their competitors are and who potential partners might be.

The federal government uses MERX to advertise most printing contracts valued at \$10,000 or more, most goods and services contracts estimated at \$25,000 or more and most architectural and engineering consulting services and construction/maintenance contracts estimated at \$60,000 or above.

What happens to contracts below these amounts? Searching for the answer leads to the murky world of government "source lists" and "databases of registered companies," revealing the Selection, Prequalification and Evaluation of Consultants (SPEC) computer system, or the Qualified Print Supplier Agreements (QPSA). Becoming a member of this secret society requires time and patience, but for some companies it has its rewards.

MERX is similar to other subscription-based services. Once registered, users enter an ID and password to move beyond the MERX home page (the log-in process is automatic with the Datapac software supplied by MERX) to the numerous links for various functions.

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The MERX philosophy is attractive: access to all small and medium enterprises and large corporations, even to those beyond Canada's borders. It is supposed to make buying and selling goods and services easier, increase competition and provide a level playing field for businesses competing for procurement opportunities within the public sector. If nothing else, it has mass marketed many of these opportunities. The MERX Web site received over one million hits in its first week.

Plugging in

You can access MERX in two ways: via the Internet or through dial-up services (by ordering Datapac software from the MERX Call Centre). The Internet method is preferable since there is a 15-cent-per-minute charge for the dial-up service. Once connected, anyone can view the posted bids, which are basic notices of available opportunities, and order more detailed specifications for a flat fee of \$15. This investment also gives users 30 days to try out MERX. If they like it, they can subscribe for \$7.95 a month (recently reduced from \$8.95).

Once registered, users can access more than the list of bidding opportunities on the searchable database. They can search a four-year archive of bids, get information on who is bidding, and use a request feature that notifies a company when relevant bids are posted. There is also a "matching profile" function that will perform the same search every time the user logs on, or MERX can automatically

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Color the only way to go with handhelds

Imagine that you lived in a world without color. Everything in life would be either black or white, with the odd bit of shading to make it a bit more interesting.

And then, all of a sudden, you see a rainbow—and the world of black and white never seems the same again.

Well, I am afraid that has happened to me. For years, I happily toiled on monochrome handheld computers in trains, planes and automobiles—using them to write and file stories from exotic locations around the world. And then came the advent of the color Windows CE 2.0 handheld systems late last year.

At first, I was able to dismiss the color as a gimmick. "It will never catch on," I confidently told myself. I felt sure that the extra drain on battery power and the variable quality of the small LCD color screens available for use on handheld systems would severely limit their appeal.

I am no longer so sure about that. I am currently several months into a year-long test of Sharp's amazing Mobilon HC-4500 Windows CE 2.0 color handheld computer—and have also recently spent several months using Hewlett-Packard's slightly larger HP 620LX. I still have a couple of Psion handheld systems that I use—both of the monochrome variety—and I am increasingly finding it hard to go back to them after using the Sharp and the HP.

And it is largely the screen that makes the difference, since the Psion machines offer superior software, better keyboards and tend to be much more stable in operation. Black text on a white background, as experienced on a color screen, is simply a lot easier on the eyes. Likewise, Web-browsing on a handheld with a color screen—with its vivid graphics and color photos—is a superior experience to doing the same thing with a monochrome display.

None of this is to say, however, that the displays on the current crop of handheld color systems is perfect. For one thing, the size of the screen "real estate" means that it is generally only possible to create a 640x240 or "half VGA" display.

When viewing large amounts of information (perhaps a big spreadsheet file), this size of display means that users often have to spend a lot of time scrolling to get where they want to go. But at least having color allows you to, for example, show negative numbers in red, and view color charts and slides that you have created in a way that is more meaningful.

On the Sharp Mobilon, there is another good reason for enjoying a color display—it lets you look at any digital photos that you may have taken with the Mobilon's optional



ON THE GO

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digital camera attachment. Combine this with the fact that the Mobilon includes a built-in modem to encourage you to use it to do your email and Web browsing and you have another reason for wanting a color screen on your handheld.

But, you are probably thinking, there must be some other downside to having a color screen on a handheld. Otherwise, every handheld computer would have one. That may yet end up being the case in the near future.

Before that happens, handheld PC makers will first have to find a way of making their color screens easier to read in bright sunlight. This is one area where the displays on many color Windows CE 2.0 still fall down. Monochrome LCDs, on the other hand, tend to be more effective in bright sunlight because they offer a strong contrast between a pale LCD background and dark black text.

Color screens also tend to consume much more energy. While systems such as the latest Mobilon and the HP 620LX are starting to offer greater battery life, the types of batteries required still tend to be proprietary rechargeable battery packs (and not standard AA batteries) and battery life is measured in hours and not days.

So while color handheld systems are enticing—and really pretty impressive—be aware that there are still trade-offs that you must be prepared to live with in order to get the color capability. My solution has been to carry a monochrome Psion handheld as my "second spare" in case the battery on the Mobilon (or the HP, during the period I was testing it) dies at a crucial moment.

This is an extremely silly solution, but it served me well on a recent trip to France and the United Kingdom. I look forward to the day when I can use a single handheld with the color display capabilities and compactness of the Sharp Mobilon, the long battery life, excellent keyboard and software reliability of the Psion Series 5 and the robustness and expandability of the HP 620LX. It will cut back the "gadget clutter" in my luggage considerably and will allow me to accomplish even more with handheld systems than I already do. □

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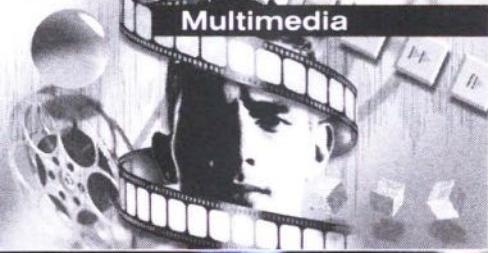
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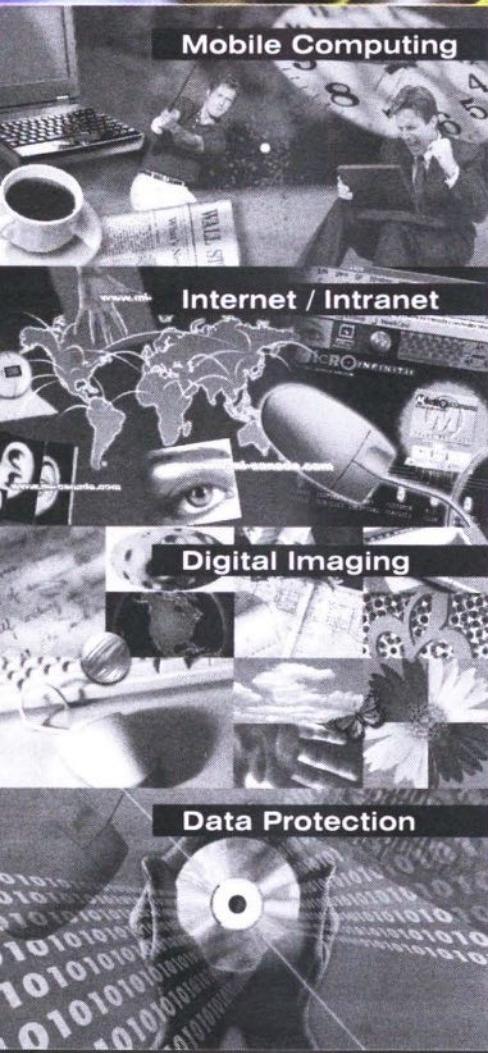
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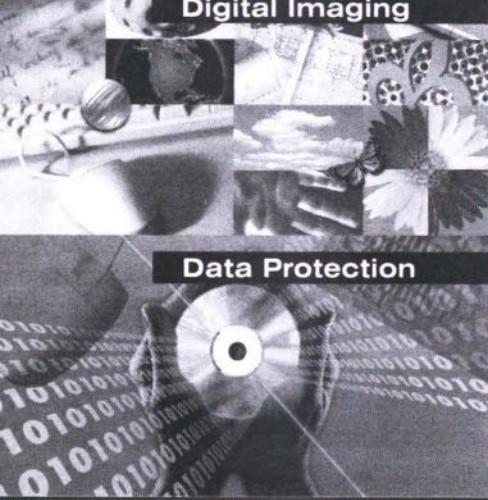
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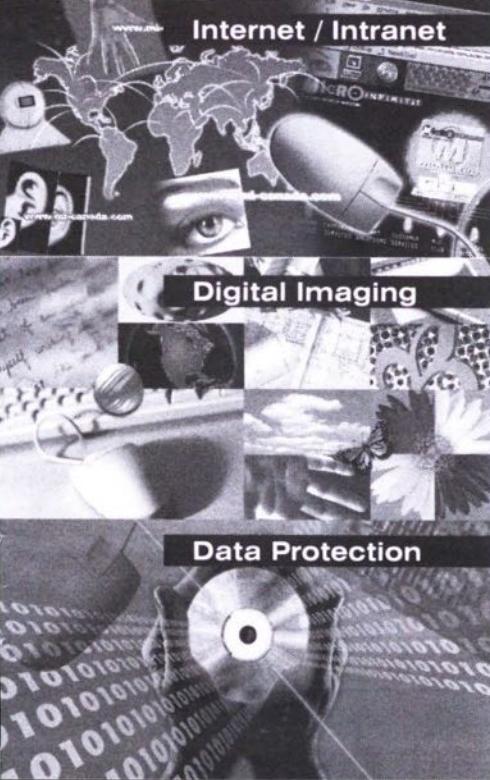
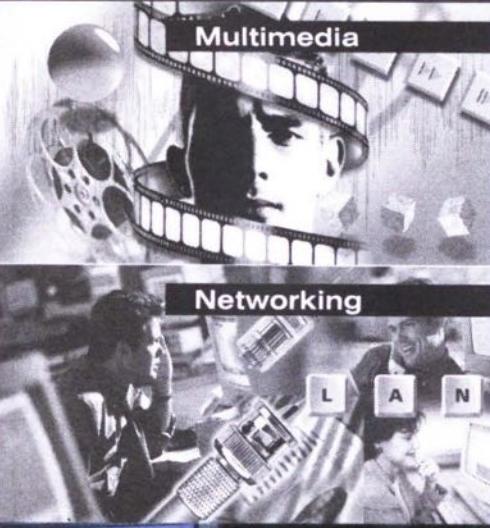
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Selling to the government: where to start?

By Michelle Schoffro & Curtis Cook

Want to find out how to do business with the federal government? Talk to your potential client. The government has no shortage of information to help you decide if public sector contracts are a lucrative market for your business. And the information is free. There are companies willing to charge you for this, but a few well-placed calls or searches on the Internet will put you in touch with the source at no cost. Here are a few places to start:

Public Works and Government Services Canada (PWGSC) is the main purchaser of goods and services for the federal government. With more than \$8 billion in contracts awarded annually by this department, PWGSC is probably a good place to start your search. Like most federal departments, it has offices across Canada and can be found in the Government of Canada section of the blue pages in your telephone directory. The department's Web site (<http://www.pwgsc.gc.ca>) contains information on both Contracts Canada and MERX (also online at <http://www.merx.cebria.com>).

Contracts Canada, unlike MERX, is an information source on how to sell to the federal government. It provides online information and hosts seminars. Contracts Canada (which has its own Web site at <http://www.contractscanada.gc.ca>) also maintains a supplier registration service for Public Works, with the goal of creating a one-stop supplier registration system for the federal government. You can find out more by calling PWGSC or Contracts Canada directly.

Are you into real estate? Maybe you would like an opportunity to buy some government property for future resale or use. PWGSC can provide you with information on purchasing surplus federal government properties. It lists contact names and telephone numbers. Of course, the provinces and municipalities get first shot at surplus properties, but there may be some tempting leftovers. The 24-hour hotline (888-GOV-LAND) will give you basic information on provincial and regional properties.

Department of Indian and Northern Affairs: Do you own or work for an Aboriginal firm? The federal government has a program in place to make it easier for aboriginal companies to do business with government. As part of this program, the Department of Indian and Northern Affairs has created a directory of aboriginal businesses that can fulfill the government's procurement needs. It can be found on the department's Web site (<http://www.inac.gc.ca>).

Strategis (<http://www.strategis.ic.gc.ca>) is a good place to find all business-related resources. Once on the main menu, click on Business Support and Services and check out

Contact! The Canadian Management Network. It includes valuable information from the government and the Canadian Federation of Independent Business.

The Canada Business Service Centres (CBSCs) may be the best contact for doing business with the government if the Internet is

not your mode of communication. CBSCs are located in every province and territory. The toll-free centres let you talk to business information officers who are surprisingly knowledgeable about the endless number of government programs and services, provided departments have given them the right information.

You can drop into one of the centres to do research on your own or with assistance of staff, or use the toll-free fax-on-demand service.

Wherever you choose to start, patience is required to do business with the government. So take a deep breath, pick up the phone or log on. □

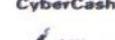
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Scottish bank claims huge videoconferencing savings

By Sylvia Dennis

EDINBURGH, Scotland (NB)—The Royal Bank of Scotland estimates that it is saving around US\$117,000 a month through the use of videoconferencing links.

The bank backs up its claim by noting that it has been using videoconferencing technology for more than a decade and today uses the systems both within the United Kingdom and globally. According to bank officials, its staff clocks up more than 8,600 hours a year in videoconferencing meetings, so saving on staff time and cost that would otherwise be required for traveling to meetings.

George Clarke, the bank's senior manager of voice and video communications, said that videoconferencing has enabled the bank to operate its business across the whole of the U.K., despite the fact that its headquarters are in Edinburgh, the corporate operation is in London, and other key business divisions are located throughout the U.K.

"Visual communications give us a realistic and cost effective means of communicating, allows us to make faster decisions, and reduce the need for travel."

—George Clarke, Royal Bank of Scotland

"Visual communications give us a realistic and cost effective means of communicating, allows us to make faster decisions, and reduce the need for travel," he said.

The bank, which runs its internal videoconferencing service over its Philips digital private automatic branch exchange (PABX) network, has four studios in London, three in Edinburgh, and one in Manchester, as well as 30 other desktop systems in non-centralized regional offices.

Each studio is equipped with a British Telecom videoconferencing room based systems that can accommodate up to eight people in a conference room environment.

In addition, the bank uses its systems to connect to its sister companies overseas—Citizen Financial Group in New England and Banco Santander in Madrid, Spain—as well as other offshore locations like the Channel Isles and the Isle of Man.

According to Clarke, the bank encourages everyone throughout the business to use videoconferencing—from its property departments, to its technical and human resources people—

and within all levels of the hierarchical structure.

"Videoconferencing is more than a convenient method of communicating with colleagues and clients, it is an important tool that allows the company to communicate effectively and efficiently while saving on costs incurred when traveling to meetings," he said.

Clarke notes that videoconferencing is a tremendous time and cost saving facility that allows the bank to make instant decisions and help build a rapport with clients.

"It's also a very productive way to do business and, more importantly, improves the quality of life for individuals by freeing them

up from time spent traveling," he said.

According to Clarke, videoconferencing has become an integral part of the company culture, even to the extent that employees are asked to explain why, when completing travel request forms, videoconferencing would not suffice instead. □

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Minimizing liability when signing a lease: Part II

Last month we looked at various ways of protecting your financial interests when leasing space. For example, incorporating, asking for a penalty clause, leasing short term with options to renew, and not signing a personal guarantee.

In the last part of this two-part series, we will cover various options to obtain free or reduced rent and construction allowances, and advise consumers on lease assignment pitfalls to avoid.

Free or reduced rent

Often a landlord is willing to offer a free rent period or reduced rental payments as an incentive to rent the premises. This is generally the case with new rental spaces, if a space has been vacant for some time, when there is a lot of vacant office space on the market, or when competition and incentive packages are very keen. Try to structure rent payments in the first year to limit the financial outlay as much as possible. Here are some suggestions:

- Request graduated or reduced rental payments. Have the rental payments start at a low rate and graduate upwards to the higher amount every month over the first year or two. The aggregate amount may be less than the normal annual aggregate rent for the subsequent years of the lease.
- Negotiate from one to six months or even up to a year rent-free. The amount of free rent will depend on the length of the lease, the improvements the tenant is paying for,



SOHO

Douglas Gray

the type of business (if it enhances the image of the building or acts as a customer draw), the prevailing competition in the marketplace and other factors.

- Ask for a free rent period. In this example, possibly the first, fourth, eighth and twelfth months would be free. This would provide the landlord with some cash flow throughout the year but would also provide the tenant with a monthly rent saving on a quarterly basis in the first year.
- Try to have the landlord pay for all costs of renovations up to an agreed maximum. It depends on circumstances as to how much the landlord will be prepared to pay. For example, the landlord might be desperate to have a good tenant in the building to draw other prospective tenants and customers. The tenant might agree to a five-year lease on the basis that the landlord pay \$50,000 for improvements, for example. Everything depends on the circumstances and your negotiating leverage. This subsidy of renovations, commonly referred to as

improvements, would be over and above any other incentives you ask for.

Construction allowances

If the tenant is going into newly constructed premises, provisions may be negotiated with the landlord to save the tenant renovation expenses. The provision may state the landlord would pay to have all the leasehold improvements done required by a tenant as a condition of the lease. It would be less expensive for the landlord to pay for such costs if they are done when the landlord is paying for the overall construction of the building.

Lease assignment

You should be careful to remove your personal liability and risk before selling your business and assigning the lease to a buyer. Otherwise, in the event that the buyer defaults on the terms of the lease, the landlord has the right to sue not only the buyer as the assignee, but also your company as the assignor. Ask the landlord to remove your personal guarantee (assuming you gave one) at the time the lease is assigned. Be certain this agreement is in writing and signed by the landlord. The landlord can obtain personal guarantees from the buyer of the business if he wants.

Remember to adopt a very businesslike and tough negotiating posture when considering a lease. Have a skilled lawyer assist you

with the negotiations either directly or indirectly. Have your accountant give input, and don't settle for a lease package that has greater potential business or personal financial risk than your comfort level. Always comparison shop so you can maximize landlord incentives prevailing in the marketplace as leverage to negotiate the best deal. □

Douglas Gray, LL.B., is a Vancouver-based expert on small business. Formerly a practicing lawyer, he is now a consultant, speaker and author of 16 bestselling books, including *The Complete Canadian Small Business Guide* (published by McGraw-Hill Ryerson) and *Start and Run a Profitable Consulting Business* and *Start and Run a Profitable Business Using Your Computer* (both published by Self-Counsel Press).

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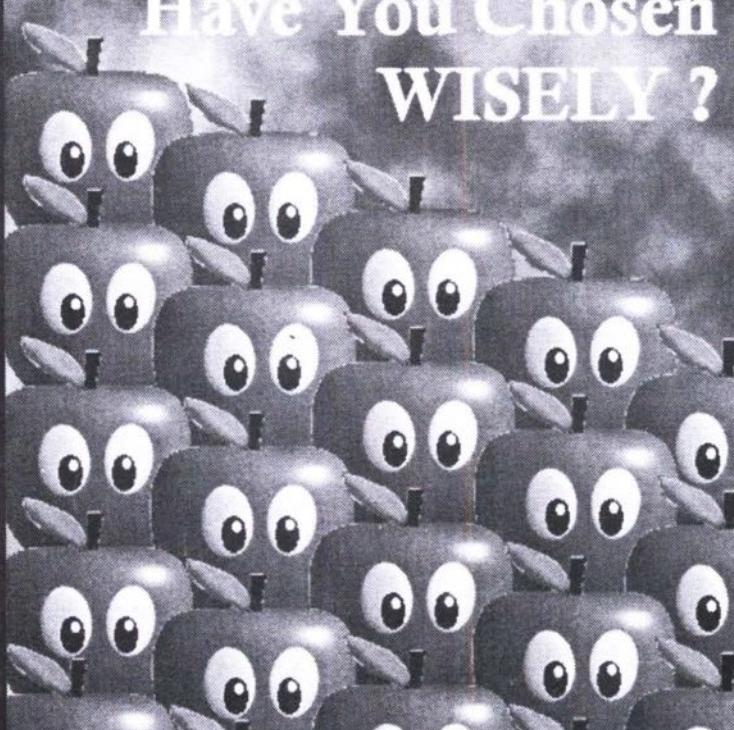
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Getting the goods (and bads) from BDC

The Business Development Bank of Canada and small business loans

By Ross MacDonald

You're a bright, new, shining entrepreneur ready to take the business world by storm. Your fresh ideas are just what's needed—everybody already wants what you plan to offer—and within a few short years you'll be in command of a whole chain of busy, profitable enterprises. There's only one problem: money. You don't have any. And the banks won't give you any.

Don't despair. Canada is replete with federal, regional and provincial government assistance programs geared toward helping small business. However, the only federal agency that is really in a position to provide start-up or financing capital is the Business Development Bank of Canada—otherwise known as the BDC. The other programs either serve exclusively in an advisory capacity or, when an agency actually can provide capital, the money is sourced from the BDC. In other words, any small business operator looking for federal financial assistance will eventually be dealing with the BDC.

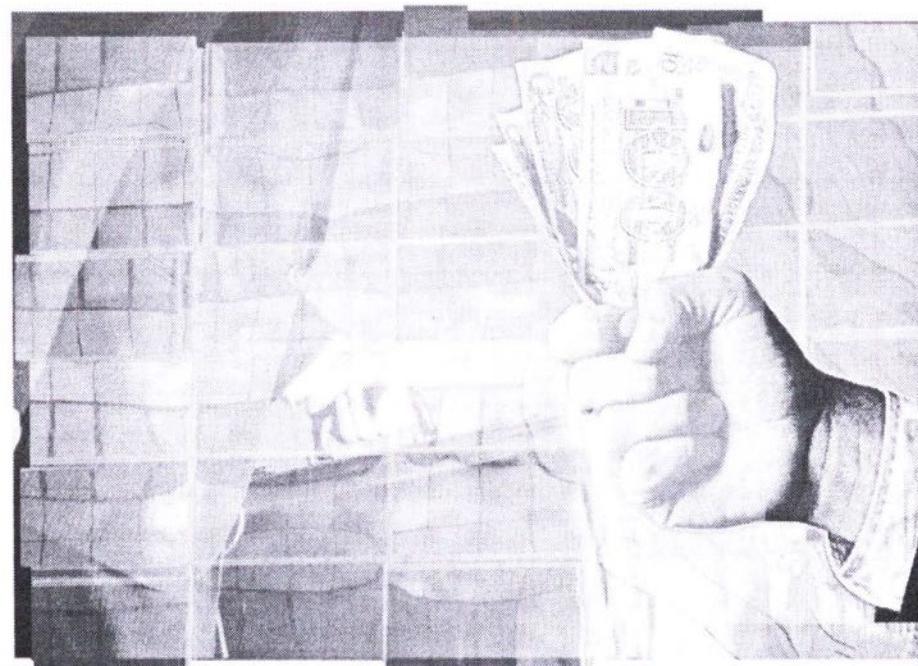
Nurturing small business

While the BDC's mandate is specifically oriented toward creating and nurturing small business, it remains a government institution with all the inherent bureaucratic complications. And though the BDC has undeniably assisted a large number of entrepreneurs and business operators over the years, recipients are subjected to an often less-than-pleasant application process that by no means guarantees funding.

Speaking for the BDC, Vice-President Andre Dusablon stresses that his organization lends money, and is not a grant-bestowing institution. However, he says the BDC's mandate is quite different from that of chartered banks because the BDC was largely conceived to help create small businesses across Canada.

"Given that the government is our main shareholder," says Dusablon, "they gave us a mission to really be helpful in creating and developing small- and medium-sized businesses that are a lot riskier than would be undertaken by other banks. We are not here to make loans to Bell Telephone; we're here to provide specialized financing to commercially viable small businesses other banks might think are too high risk."

The BDC, for example, will consider loaning to knowledge-based industries (KBI)—computer software, services, publications, etc. which, as anyone



who's tried to get backing for such an enterprise from a regular bank knows, is out of the question when the only security for such a loan is the knowledge base itself. The development bank finances other high-risk business needs, such as manage-

business. We're more interested in project financing. So we looked at the company that would be created, we looked at the business plan, and we noticed that the person starting it was involved in health care for the past 15 years. There was that

"We are not here to make loans to Bell Telephone, we're here to provide specialized financing to commercially viable small businesses that other banks might think are too high risk."

- Andre Dusablon, the BDC

ment buy outs, high-tech upgrades, research and development, and inventory production.

A good example of a successful KBI loan application was made by a home health care service in Ontario: "This was a very, very small business idea that was technologically oriented which provided home health services to older people. They got a first loan of \$25,000 and a second one of \$50,000 and now they've got three or four different offices in the region," Dusablon recalls.

"To get that kind of money the person would normally have had to go to a chartered bank and most likely put his house in security to get a personal loan that they would then convert to his

important link there, so we just went along."

According to Dusablon, the BDC, unlike chartered banks, is mandated to operate on a cost-recovery basis—although slight profitability is not discouraged as it makes more money available to help other small businesses.

However, the BDC does, like chartered banks, take steps to recover defaulted loans. Where it's not their policy to seize "wives, kids and houses," they will take any and all business assets for liquidation.

"I could be making a loan of \$100,000 to a fishing lodge," Dusablon illustrates, "which is the kind of business that is seasonal. So if pay-

ments are missed in the off-season, we're a lot more patient than regular banks—we may postpone payments, for example, to accommodate the seasons. But, at the end of the day, if the business goes belly-up, obviously the assets will be seized and we will go and sell them. We are a bank in the end."

That kinship with standard financial institutions has an up side too, in that the BDC has developed strategic alliances with chartered banks to share risks and total amounts of specific loans. In the recent past, it was necessary to have been turned down by a regular bank before applying to the BDC. Changes to the mandate have eliminated that rather onerous requirement.

What BDC loans

In terms of hard numbers, the BDC had active accounts totalling \$4.4 billion spread out over more than 17,500 clients at the end of its last fiscal year. New loans in calendar year 1997 totalled \$1.4 billion disbursed into 6,400 small businesses, an increase of 25 per cent over the previous year. Reflecting the BDC's new-found enthusiasm for non-traditional businesses, 40 percent of those new loans were granted to KBI and exporting enterprises.

Even more encouraging is that the BDC has developed a varied menu of loans ranging up to \$250,000, each with its own mandated criteria and qualifications. The BDC offers term loans, venture capital loans, expansion capital loans, micro loans and what they call youth entrepreneur loans.

A term loan is similar to a regular loan from a chartered bank, providing working capital for growth. A venture loan, on the other hand, is a form of venture capital but without the BDC participating in company ownership (they will, however, take a royalty from the profits). An expansion capital loan is similar to a venture loan but is available to businesses in very early stages of development. Of more interest, perhaps, to new entrepreneurs would be a micro loan of up to \$25,000 for a new business or up to \$50,000 for an existing business.

Then there's the Youth Entrepreneur loan—for people 19 to 34 years old—which, though a "very, very small" amount, may be granted to someone with a good idea starting a business venture in their basement.

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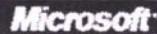
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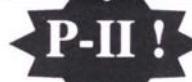
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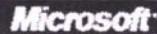
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deal with the impact of the Year 2000 (Y2K) computer problem. Under this program, small businesses perform an assessment—using their own consultant or a guide provided by the BDC—of the financial impact making their computer system Y2K-compliant will have on their operations. If the cost is prohibitive or could cause the business to collapse, the BDC will loan the company the money and consider postponing payments until 2000. And, unlike other BDC deals, there are no fees attached to the transaction.

Bringing something to the table

The catch to all this apparent largesse, however, is that all applicants for all loans have to show personal financial commitment to the enterprise in question. You can't approach the BDC with the idea to start a company but offer absolutely no personal stake in its success. The bank is simply not interested in that type of arrangement.

Although the BDC considers each case individually, it is generally interested in applicants who maintain a current company account at a regular bank as well as a small line of credit.

"There seems to be an excessive amount of hand-holding, shall we say, but if they have money and nobody else does, you just kind of have to hold your nose and go through it."

—*Douglas Maenpaa, Synergy Electronics*

Your collateral can be quite small but, as Dusablon puts it, "Obviously we don't want to finance the business 100 percent, otherwise we might as well run it ourselves."

Applicants also have to do enough background research to pass what is called "due diligence"—establishing the existence of a viable market or need for the product or service the new business will provide.

Douglas Maenpaa is the owner of a new business called Synergy Electronics in Ontario, which manufactures airflow monitoring equipment (he designed) for the mining industry. He successfully obtained BDC financing, largely because he met the listed criteria. Maenpaa has an extensive background in mining and busi-

ness, had done a thorough marketing and business plan and, perhaps more significantly, had raised quite a bit of capital on his own—establishing that all-important personal stake in the success of his proposed venture.

"Initially, to get this product going, we had to do some R&D,"

Maenpaa says. "I'd gone to a few banks to see if they'd be interested in getting involved at that stage. Of course, the chartered banks weren't, but neither was the BDC. But I did raise capital from some private investors to get the prototypes to the point they were ready for testing and at that point I went back to the BDC for financing to build up a small amount of inventory that could actually be put inside the mines."

Fortunately for Maenpaa, the BDC was willing to give him a micro loan of \$25,000 at that point. He was first interviewed by the BDC to establish his level of business acumen. The bank must have been satisfied with the results because loan officers didn't insist on further input before granting the loan.

"They asked about all the different aspects of business," says Maenpaa, "including marketing, accounting and so on. But I knew pretty well where I wanted to go. I would say there seems to be an excessive amount of hand-holding, shall we say, but if they have money and nobody else does, you just kind of have to hold your nose and go through it."

Maenpaa's involvement with the BDC began in August 1997. He received his loan a couple of weeks later. By November he had a large order from a Quebec mining company but not enough money for materials required to fill it.

This time, purchase order in hand, he approached the chartered banks again for the necessary funds and was again turned down. "The chartered banks ended up wasting about two weeks of my time that I just couldn't spare and didn't do bugger all for me in the end," he says.

"We needed about \$60,000. So what we did was apply for credit with our suppliers and got \$30,000 worth of credit that way. Then we went back to the BDC who came on board with another \$15,000 which was a great help as it was needed exactly when it came in."

Maenpaa wraps up his story with the follow-

ing advice: "The cost of the money is a little bit higher. But I'd say definitely apply to the BDC. They're going to ask for a business plan and so on—that's normal—but they are an excellent second source of funding."

As alluded to by Maenpaa, a second and integral aspect of the BDC

is that it provides management services in terms of helping with the development of business plans and strategic plans through advisory and mentoring programs. The development bank has more than 1,000 qualified counselors spread across the country. BDC's reasoning is that assistance from acknowledged experts will greatly increase the chance of a business to succeed and so, in turn, increase the BDC's chances of receiving repayment in full.

These services are particularly exercised for those applying under the Youth Entrepreneur program. The bank's mentors and advisors participate in all aspects of business creation, from project preparation through self-assessment, training in management skills and marketing strategies, and the completion of a proper business plan. Only after all that has been satisfactorily completed will financing kick in.

But it doesn't end there. Over the next few years, as the business develops, BDC advisors may continue to participate.

"Between our different loan programs and our management services," says Dusablon, "we like to provide what we call a total solution approach. If you're starting a new business and your need is \$30,000, we may be looking at a micro loan or a Youth Entrepreneur loan. But if an existing company needs \$30,000 or even \$1 million or more, we've spent the last few years making sure we have the right range of products and services to help that size of business too."

Though this all sounds good, some have found the advice and management services to be more of a hurdle than a help.

Michele Baron used BDC loans to start a private K-8 school in Sudbury, Ont., last year. Though extremely happy about receiving \$50,000 of the \$75,000 she requested from the BDC, she strongly echoes Maenpaa's observation about "excessive hand-holding."

"When I first went to the Business Development Bank they were very supportive,"

she recalls, "but they said they had no money for this sort of business and sent me away. In fact, they gave me the names of some investors to go to who actually stiffed me very badly in the end and cost me a great deal of money I didn't have."

"But a few months later," Baron continues, "I discovered they had a new initiative for northern business so I tried them again. It took some doing, it wasn't easy. It took forever and ever and ever and it's very expensive money—the interest rate is very, very high—but they did help me out a great deal and really rolled out the red carpet once I was accepted. But getting accepted was very difficult. It's kind of like auditioning on Broadway—you have to be the absolute best at

Continued on page 28

SEAP vs. BDC

Weathering her experience with Business Development Bank of Canada bureaucracy and still without financing, Shelly Calhoun, publisher and owner of Ideal Source Publishing Inc. in B.C., found a more encouraging climate at another federal resource, the Self Employment Assistance Programme (SEAP). The SEAP is directly connected to Employment Insurance and Human Resources Development Canada and is designed to assist entrepreneurs in starting businesses.

However, as one of the few alternative sources of financial assistance to the BDC, SEAP doesn't actually provide capital for starting or maintaining a business. Instead it simply covers the living expenses of entrepreneurs (currently collecting employment insurance or who have collected within a specified number of years) while they get their business going—and only to an amount that doesn't exceed the maximum EI rate.

More to the positive side, however, SEAP offers rudimentary business courses that teach essential skills like marketing, cash flow management, making a business plan, creating a balance sheet, etc.

"I had very good experiences with SEAP," Calhoun says. "But, when you want to get funding, or capitalized, or any type of loan from the government, it's extremely difficult. They're supposed to make it easier for small business but, believe me, it's not easy at all."

—Ross MacDonald



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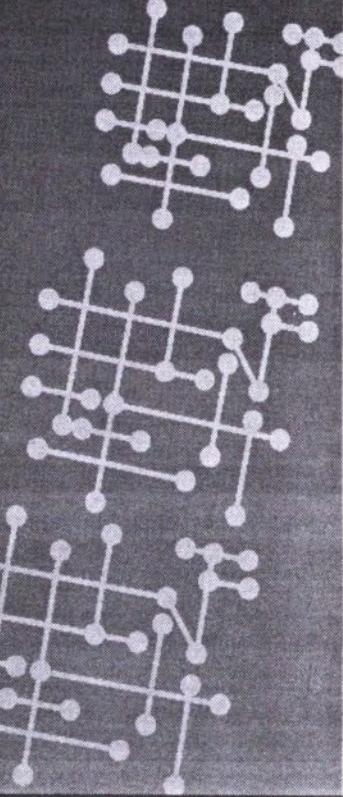
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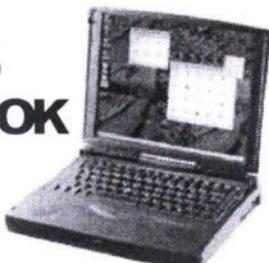


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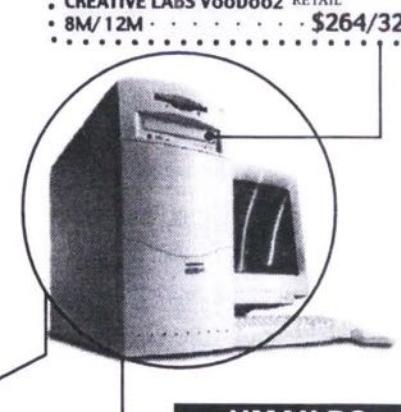
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Getting the goods from BDC

Continued from page 26

singing and dancing. But once you get the part, boy, they treat you like gold."

Baron was directed to the BDC by the Sudbury Business Development Corporation and was well-armed with a business plan, cash flow projections and pre-registration forms to prove school enrolment. However, she was forced to extensively revise her business plan and, though they offered an advisor to help her, she simply didn't have the money to pay for that service.

"I'm not really sure what they wanted because I thought my business plan was complete," says Baron, "I had my own extensive management experience and qualifications, plus I had really researched the market provincially, nationally and globally."

By the time she met the needs of her BDC representative and actually received the loan, months had elapsed and Baron had only 48 hours prior to the beginning of school in which to lease and prepare the school building. But school successfully started on time last fall and Baron is happy to report a burgeoning register of students and applicants.

Conversely, Dusablon describes the process of applying for BDC money as a series of straightforward steps:

- 1) prepare the project and develop a business plan.
- 2) establish the capabilities of the borrower(s) to operate the type of business or service proposed.
- 3) decide which category of loan is most suitable,
- 4) evaluate the borrower's commitment to the business,
- 5) identify any counseling or mentoring required,
- 6) then you get the loan.

As mentioned earlier, there may also be further steps in that the BDC often stays involved during the initial stages of a new business.

Shelly Calhoun, publisher and owner of Ideal Source Publishing, Inc. in British Columbia publishes a database of building permits, business licences and credit information gathered from municipal and court registries. Her experience with trying to fulfill the BDC's extensive preparatory requirements better reflects Baron's account than Dusablon's.

Calhoun first contacted the BDC after reading a newspaper ad touting micro loans for new businesses: "I applied to the BDC three times and had nothing but trouble," Calhoun says. "The first time I approached them, I had just gotten into business and didn't have the amount of experience they wanted. And I wasn't at my break-even [the point at which a business covers its costs]. If you're not at your break-even, they don't even want to talk to you."

Calhoun says she had no choice but to use the BDC's consultants for the preparation of all material required to pass the due diligence evaluation. "It's very expensive," she sighs. "It cost me nearly \$2,500. So, if you ask for a loan of \$25,000-\$30,000, the consulting fees come out of that. Plus you're charged a higher rate of interest and they charge you a set-up fee. Let's put it this way . . . the cost to get funding is horrendous."

In the end, Calhoun didn't receive any assistance from the BDC, even after following all of the instructions and paying for the bank's advisory services. "They want you to do a review, then they ask you to alter your business plan, then they ask you to revise your marketing plan then they ask you to revise your business plan again and all these things . . . and then they tell you they've changed their strategies and they're deliberately making it hard for people to get loans now because they've been losing money. "It took me months to get turned down the last time I went to them. I was extremely unhappy at the time, but now I'm very glad I got my business going without the participation of the BDC." □

Contacting BDC

If you think the government would be a good source of financial assistance to help you create or maintain a small business, a good place to begin before making any calls or appointments is *Your Guide to Government of Canada Services and Support for Small Business*, a free 112-page booklet from Industry Canada, which lists virtually every federal and affiliated resource available. It is available through a Canada Business Service Centre in your area or by contacting: Industry Canada Distribution Services Communications Branch 205D, West Tower, 235 Queen St., Ottawa, ON K1A 0H5 Tel: 613-947-7466 Fax: 613-954-6436

Panasonic debuts rugged Toughbook

SECAUCUS, N.J. (NB)—A recent IDC study said corporate notebooks have an 18 percent damage rate with an estimated US\$1,200 repair bill for each damaged notebook. Panasonic (parent Matsushita Electric Industrial Co.) says its just-announced 6.4-pound Toughbook 71 can handle the spills, jolts and drops faced by mobile professional notebook users, saving the departmental budget for more productive purposes than notebook PC repair.

"With this unit, we now have rugged notebook models to meet every need—in the field, the traveling professional and the person who wants the best of the best," a Panasonic spokesperson said.

The Toughbook 71 uses a magnesium alloy cabinet to protect the LCD screen and internal components. The hard disk drive, mounted in the same polymer gel material as the firm's Toughbook 25 notebook, is protected from vibration and shock.

The keyboard and touchpad are moisture-resistant to protect against spills, which IDC identifies as the second largest cause of note-

book PC damage.

The notebook uses Intel's Mobile Pentium II 266 MHz processor, with 32 MB SDRAM, expandable to 160 MB, and a 512KB Level-2 burst SRAM cache.

The graphics system runs on NeoMagic's NM2160 chipset with 2 MB EDO RAM video memory. A 4 GB Ultra ATA hard drive has a 33.3 MB/sec data transfer rate. The system comes stock with a floppy disk drive but users can opt for other devices like a 24x CD-ROM drive and an LS-120 Super Disk Drive with removable 120 MB storage capacity and standard floppy compatibility.

The Toughbook 71 has a 12.1-inch, non-glare, SVGA Active Matrix color LCD screen, which makes it very good for outdoor viewing, said the firm. The touchpad is pressure sensitive and includes a pen-input pointing device.

The Toughbook 71 is priced at US\$3,499 without accessories.

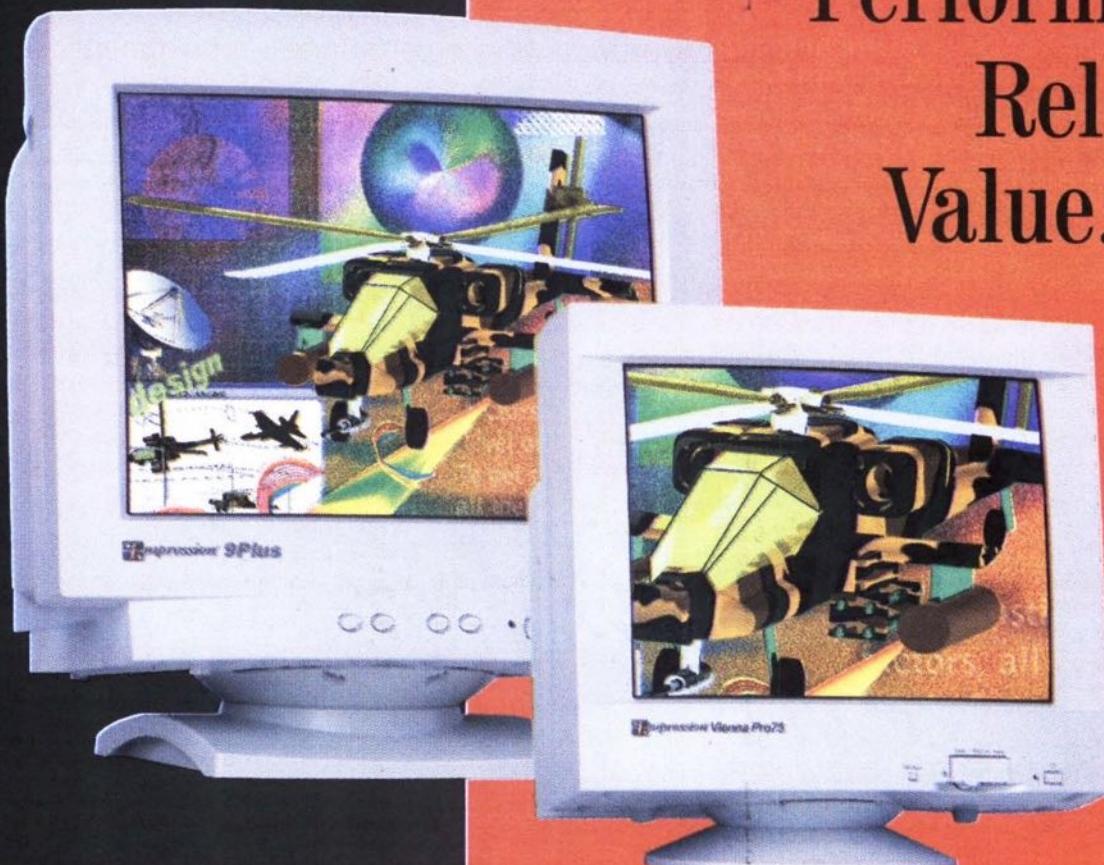
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MODEL	TVXL	TV	SVXL
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Fortune 1000 firms reluctant Net investors

By Sylvia Dennis

CAMBRIDGE, Mass. (NB)—Just when you thought everybody and their grandmother was using Internet firms and services with gusto, research from International Data Corp. (IDC) suggests that the Fortune 1000 companies are not following this trend.

Delving into IDC's *Global Infrastructure* research reveals that, although the big companies are achieving a four times return on investment from the development of Internet, intranet, and extranet applications, they are still holding back from deploying mission-critical applications on the public Internet.

According to IDC, the Fortune 1000 firms (the most profitable 1,000 companies as surveyed by *Fortune* magazine) in the U.S. are holding off from using the Internet to its full

"Our findings clearly indicate that the phenomenal business growth in the Internet may plateau because of the failure of technology standards to meet business requirements"

—Michael Sullivan-Trainor, IDC

capability until guarantees of reliability and security can be made.

IDC says its research was conducted jointly with the Open Group, the international information technology (IT) association with more than 200 members worldwide.

IDC says that it surveyed information technology managers at large multinational corporations, including those in retail, financial services, telecommunications services,

computer equipment, and mail-order industries. The average number of employees in these companies was more than 19,000, with average annual revenues of US\$1.5 billion.

In addition, IDC's research found that the return on investment and revenue gains have not necessarily impacted corporate bottom lines, as well as there being a danger that the Internet will not fulfill its promise as a business infrastructure that opens up new markets and encourages new ways of doing business.

Interestingly, IDC also notes that unresolved issues such as security, reliability, and performance may lead to a "leveling off" of Internet benefits and therefore slow down its deployment as a business tool.

"Our findings clearly indicate that the phenomenal business growth in the Internet may plateau because of the failure of technology standards to meet business requirements," said Michael Sullivan-Trainor, a senior analyst with IDC.

According to Sullivan-Trainor, the short term success companies are experiencing with intranets and extranets may also lead to a fragmentation into hundreds of closed private networks built on top of the public infrastructure.

"Without a common set of specifications, technologies, and products which guarantee a level of security and reliability businesses require, the Internet may simply become an

interesting public access network," he said.

Other key findings of the study included:

- The use of Internet technologies has grown at a rate of 200 percent per year.
- A full 100 percent of companies have deployed an intranet, 50 percent are extending services to remote users via a virtual private network (VPN), and 66 percent were extending their network to business partners via an extranet.
- The popularity of intranets is being driven by the ease-of-use, the ability to provide new applications, the ability to tie-in remote offices, and network management.
- Twenty-five percent of companies are inhibited in intranet deployment by issues of interoperability over time, lack of skills, and integration with legacy systems.
- More than 80 percent of companies said security was the primary barrier to expansion of extranets and VPNs.
- Less than 15 percent of companies surveyed said they would deploy mission-critical applications on the Internet.
- And sixty percent of corporations surveyed said they would accelerate their plans for moving to the Internet if they were guaranteed security and reliability.

"We were interested that our respondents do not want governments or equipment vendors to solve the problems of reliability and security," said Sullivan-Trainor.

"In fact, 60 percent of those we surveyed believed that consortia were the proper organizations to define a collection of specifications, technologies and products for solving the Internet woes," he said. □

IDC <http://www.idc.com>
Open Group <http://www.opengroup.org>

Nortel promises Y2K compliance

DALLAS, Tex. (NB)—Northern Telecom Ltd. has announced a Century Compliance program that the company said will see Year-2000-compliant releases of all its Enterprise and Enterprise Data Networks products by the end of this year. The program also provides information and services to customers to help them prepare for the turn of the century and deal with the software problems that may result.

The Year 2000 (Y2K) problem—in which dates recorded in two-digit form may cause processing errors—is mainly associated with computers rather than telecommunications equipment. However, for some businesses the results of Y2K telecom problems could be as serious as those of computer glitches resulting from the turn of the century, said Vince Rafferty, an industry analyst with Phillips InfoTech, in an interview with Newsbytes last fall. Chris Thompson, an analyst at Dataquest Inc., said Northern Telecom was one of the first telecom equipment vendors to address the issue.

Northern's program can be seen at its Web site (<http://www.nortel.com/year2000>), which lists all Northern Telecom Enterprise and Enterprise Data Networks products with

information about Y2K compliance. Tables indicate which products are currently compliant and, where applicable, what releases customers need to obtain in order to be compliant. In most cases where Y2K-compliant releases are not currently available, the tables give target release dates.

The company expects to release versions of all the products by the end of this year that will handle the turn of the century smoothly, company spokeswoman Elizabeth Lindsey said. She noted that Nortel has completed the testing phase of the program and is now completing the necessary modifications to products.

Besides providing compliance information to customers, Northern is offering some other services to help them prepare for the dreaded date change. As an example, Lindsey cited a testing laboratory in Santa Clara, Calif., where Northern will provide access to its products so that customers can test customized applications in a real-world environment without disrupting their own day-to-day operations. There is a "minimal" fee to use the facility, which is available to all Northern Telecom customers, Lindsey said. □

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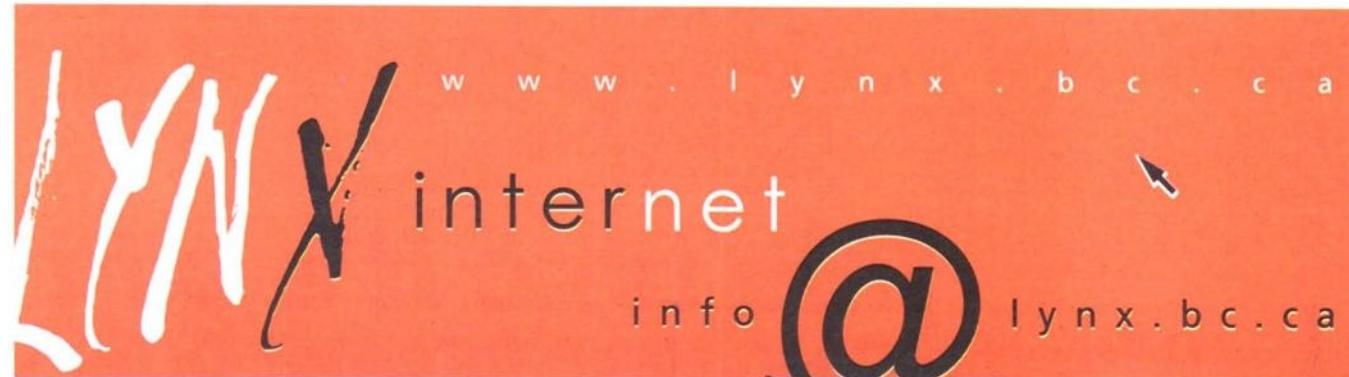
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Affordable 17-inch monitors

By Sean Carruthers

The reason the monitor is often ignored is because when it is doing its job properly, you barely notice that it's there because you focus on the content of the screen and not the method of delivery. Typically, when you start to pay attention to the monitor, it's either because of a malfunction or because the monitor no longer meets your needs.

And, chances are, those needs have been increasing, too. As more people go online, they are doing more multitasking, working in one window while chatting in another. And as more programs run simultaneously, the need for screen real estate rises. On a small screen where all the windows sit one on top of another, flipping from a spreadsheet to ICQ, over to the CD player and then back again is both annoying and unproductive.

One way to allow multiple applications to live on the desktop simultaneously is a higher resolution for the display area. While a lot of 14- or 15-inch monitors can handle resolutions of 1,024x768 or higher, the smaller text and graphics can become harder to discern, and cause eye-strain and headaches. Taking the next logical step and buying a larger monitor (more than 15 inches) would be too expensive, right? Not necessarily!

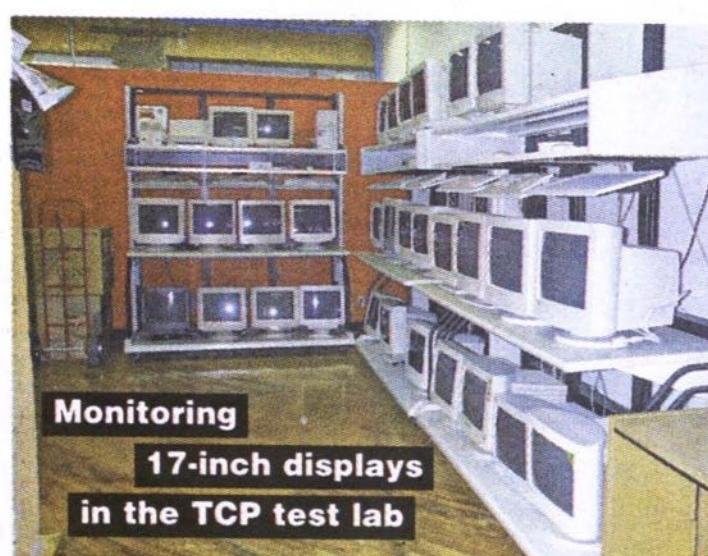
For years, 14- and 15-inch monitors were pretty much the only reasonable choice the user had. They were cheap and easy-to-use. Seventeen-inch monitors were the domain of the graphics professional or the user with cash to blow on the biggest and the best. As with CPUs and other components, though, things only remain expensive so long as they're on top of the field.

With 19-, 20- and 21-inch monitors making their way into the domain of the professionals (and consequently earning the big coin for manufacturers), the pricing on 17-inch models has fallen. Now, the average consumer can consider purchasing one with a new system, or replacing an older and smaller display.

Which kind is for you?

With all of the different types of monitors out there, choosing the most appropriate one can be a bit of a challenge, and all the numbers and terminology thrown around can be overwhelming. What does "viewable" mean? What's the difference between

Often the most overlooked system components, the monitor, is your eyes into your computer, and the way your computer presents itself to the world



display technologies used in monitors? What is "dot pitch"?

Cathode ray tubes (CRTs) are essentially big glass bottles with a phosphor coating on the big end (the screen you see) and a firing mechanism on the other end, which produces the picture when the color beams hit the phosphor. When referring to 17-inch monitors, the 17 inches refers to the diagonal measurement of the entire front of the tube. A certain portion of the tube is unusable or non-viewable, because it must be hidden behind the plastic casing that holds the tube in the monitor. The viewable area is the full size of the tube, minus the amount that's hidden or unusable. The unusable section is always present, but the amount varies from manufacturer to manufacturer, and model to model. Although all the models in this roundup are referred to as 17-inch monitors, the actual viewable area ranged from 15.6 inches to 16.1 inches.

One other basic difference between tube types can also cause confusion. As with the smaller monitors, 17-inch CRT displays come in two major types: shadow mask technology, and aperture grille technology. Which one is best for you depends on your needs.

Shadow mask monitors are manufactured with a perforated plate inside, which guides the electron beams to the appropriate

spot. Most shadow masks currently manufactured are fabricated from a substance known as "invar," which is tough and resistant to warping. This allows for more precise reproduction on the screen face.

Aperture grille, on the other hand, consists of numerous wires running along the length of the picture tube, to direct the electron beams. This process creates a much richer picture, with better color. The downside is that two "damper wires" are required to hold the many guide wires in place, and these two wires show up on the display as very thin interruptions in the picture. For the typical user, these lines tend to phase out of conscious perception. Users doing precision graphic work may find the lines annoying and intolerable, as they may be hard to distinguish from graphical elements under certain circumstances.

In addition to the two basic systems to guide electron beams to the front of the picture tube, monitors come with variations in something called "dot pitch." Dot pitch is a measurement (in millimeters) of the distance between two picture elements of the same color on the screen. The smaller the number, the smoother the picture quality will appear. Displays with a dot pitch of greater than .28 can appear rough or jagged, as discrete elements are more noticeable. There

appears to be a shift in the standard, even with "entry-level" monitors, from .28 mm dot pitch to the finer .27 mm and .26 mm dot pitches.

Yes, but at what cost?

One of the biggest obstacles to owning a 17-inch monitor in the past has been cost. This is becoming less of an issue, as the price drop over the past year has been amazing. Even one year ago, an entry-level 17-inch monitor started at \$600. Now, some monitors at the low end are available for nearly half that price.

Obviously, the lowest-priced monitors have compromises in certain areas. Entry-level monitors may have less functionality in the picture adjustment controls. Monitors with the larger dot pitch are less expensive to manufacture. The less expensive monitors may also be made from the same components as higher-end monitors, but may come from a batch with slight defects or deformities during the manufacturing process. Generally these problems appear as slight variations in brightness or as loss in focus quality around the edges of the screen.

For a number of people, these problems will be of little concern if the price is right. The casual user who would like a larger monitor but won't be using it day in/day out may not need anything too fancy. What's important to remember, though, is that monitors tend to be the most solid piece of equipment on the desktop: in the amount of time a monitor will remain useful, you may have to change your whole system a few times. For that reason, it may be worth investing a bit more up front to make sure you're getting everything you need, especially if you plan to use the monitor heavily. A few extra dollars invested in a monitor with a smaller dot pitch may be worth the investment, if chronic eyestrain is prevented.

Distort the distortion!

A monitor's on-screen display (OSD) controls come with a number of different features to help compensate for picture problems by distorting the image in different ways. Most common amongst these is the pincushion effect, which changes the edges of the screen from convex through concave. Most also feature trapezoidal distortion and image tilt.

Many monitors, even at entry level, are coming with more ➤

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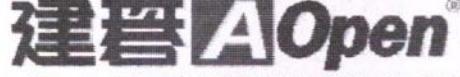
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MULTI-MEDIA

</div

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2.1 GB ULTRA DMA HDD
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15" TOWER CASE 230W
104 WIN95 KEYBOARD
16 BIT SOUND CARD
60W SPEAKER
32 SPEED CDROM
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PENTIUM 233 MMX SYSTEM
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ASUS TXP4 MOTHER BOARD
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ATI 3D XPRESSION 4MB
LOGITECH MOUSE 2B
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16 BIT SOUND CARD
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32 SPEED CDROM
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ASUS P2L97 MOTHER BOARD
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19" ATX TOWER CASE
104 WIN95 KEYBOARD
SB AWE64 VALUE PNP
160W SPEAKER
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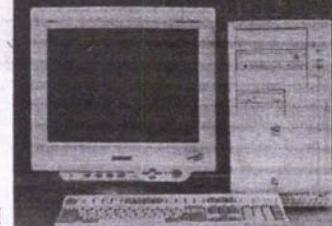
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ATI 3D XPRESSION 4M
LOGITECH MOUSE 2B
19" TOWER CASE ATX
104 WIN95 KEYBOARD
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SYSTEM B

PENTIUM II 266 SYSTEM
INTEL PENTIUM II CPU
SUPERMICRO BX BOARD
32 MB SDRAM
1.44 MB FDD
3.2 GB QUANTUM ULTRA DMA
ATI 3D XPRESSION PC2TV 4M
LOGITECH MOUSE 2B
19" TOWER CASE ATX
104 WIN95 KEYBOARD
\$950/\$32 each month

SYSTEM C

PENTIUM II 300 SYSTEM
INTEL PENTIUM PII CPU
SUPERMICRO BX BOARD
32 MB SDRAM
1.44 MB FDD
4.3 GB QUANTUM ULTRA DMA
MYSTIQUE220 4MB w/games
LOGITECH INTELLI MOUSE
19" TOWER CASE ATX
104 WIN95 KEYBOARD
\$1090/\$39 each month

SYSTEM D

PENTIUM PII 300 SYSTEM
INTEL PENTIUM PII CPU
SUPERMICRO BX BOARD
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1.44 MB FDD
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CALL FOR
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Intel PII-333

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SUPERMICRO BX BOARD
INTEL 440BX CHIPSET
32 MB SD RAM(100MHZ) A1
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4.3 GB QUANTUM ULTRA DMA
ATI XPERT@PLAY 4MB AGP
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340W SPEAKER SYSTEM
32 x CDROM
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PENTIUM II 350 MHZ SYSTEM
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1.44 MB FDD
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MICROSOFT INTELLI MOUSE
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104 WIN95 KEYBOARD
SBAWE 64 VALUE PNP
340W SPEAKER SYSTEM
32 x CDROM
ACER 56K VOICE FAX/MODEM
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Intel PII-400

PENTIUM II 400 MHZ SYSTEM
ASUS P2B BOARD
32 MB SD RAM(100MHZ)
1.44 MB FDD
6.4 GB QUANTUM ULTRA DMA
MILLENIUM II 4MB AGP
MICROSOFT INTELLI MOUSE
19" TOWER CASE ATX
104 WIN95 KEYBOARD
SB AWE64 VALUE PNP
SPK41Q SPEAKER SYSTEM
32 x CDROM
ACER 56K VOICE FAX/MODEM
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Intel PII-400

PENTIUM II 400 MHZ SYSTEM
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64 MB SD RAM(100MHZ)
1.44 MB FDD
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MILLENIUM II 4MB AGP
MICROSOFT INTELLI MOUSE
19" TOWER CASE ATX
104 WIN95 KEYBOARD
SB AWE64 VALUE PNP
SPK41Q SPEAKER SYSTEM
32 x CDROM
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Meastro SPK60K 300W-----\$55	
SUPER WOOFER (6.5")	

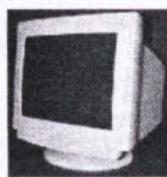
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CANON BJC250-----	\$185
CANON BJC4300/4550--\$250/550	
EPSON STYLUS400/600-\$270/340	
EPSON STYLUS 800-----\$470	
HPScanner 5100C/6100C-\$360/940	
BRATHER DX730 PLUS -----\$380	
BRATHER DX760 PLUS -----\$480	

Affordable 17-inch monitors*Continued from page 60*

- Hz, but was solid at 75 Hz
- distracting moire problem at higher resolution

The AcerView 79g is not inexpensive, at \$690, but offers great refresh rates, great display quality and a good selection of user controls in the OSD. While the moire may make the unit unsuitable for higher-detail graphic work at times, it is otherwise a respectable choice for most users.

**ADI MicroScan 5P+**

From: ADI/Supercom
Tel: 800-228-0530
<http://www.adi.com.tw>

Pro:

- solid performance with minimal moire/flicker
- brightness/contrast on separate spinners for quick adjustment
- good resolution with .26 mm dot pitch

Con:

- minimal OSD control settings

For a monitor worth \$598, the MicroScan 5P+ is a bit skimpy on user controls in the OSD. Otherwise, the performance is impressive, with great display quality and minimal flicker and moire problems.

AOC**Spectrum 7V1r**

From: Peripheral Express

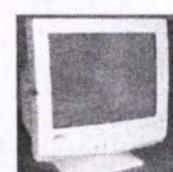
Tel: 888-734-3577 <http://www.pecanada.com>

Pro:

- press-and-spin OSD control is very easy to use.
- good selection of image shaping controls
- budget street price of \$339

Con:

- at .28 mm dot pitch, image is a bit coarse, but not too bad



This monitor is a pretty basic and inexpensive unit, but the ease of use of the OSD control, and the fact that it has image manipulation controls like pin balance, parallelogram and color temperature makes it a great value, too.

Creative Computer Systems

102-1965 West 4th Ave., Vancouver, B.C.

Creative Pentium Multimedia Package**System**

- Intel/AMD Pentium MMX Processor
- 32 MB 168 pin SDRAM
- TX Pro Chipset
- 512k Pipeline Burst Cache
- 3.2 GB Hard Drive
- 3.5" 1.44 Floppy Drive
- On-board PCI IDE Controller with high speed serial & parallel ports
- PCI SVGA Video
- 15" 1280 x 1024 N/L/R 0.28 Color Monitor
- 15" Tower Case
- 104 Keyboard
- Mouse & Mouse-pad

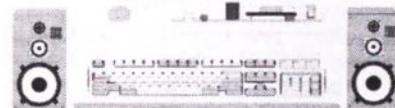
Multimedia

- 24x CD-ROM Drive
- 16 bit Sound Card
- Stereo Speakers

Fax / Modem

- 33.6 Fax / Data / Voice Modem

\$930



Two years Parts and Labour warranty

Intel-200MMX

Intel-233MMX

K6-233

K6-266

\$930

\$970

\$33/month*

\$34/month*

\$900

\$940

\$32/month*

\$33/month*

Acer OPEN System

台灣名牌
宏基電腦

Intel-200MMX

Intel-233MMX

K6-233

K6-266

\$1130

\$1170

\$40/month*

\$41/month*

\$1100

\$1140

\$39/month*

\$40/month*

Two year parts & labour warranty *OAC based on 26 months lease, first and last payments in advance with option to purchase at 10% at end of lease period.

CREATIVE UPGRADE**VIDEO CARD**

PCI SVGA 64 bit w/MPEG 1MB/2MB/4MB	\$35/49/99
ATI 3D Xpression+ SGRAM 2MB/4MB	\$80/99
ATI 3D Xpression+ PC2TV 2MB/4MB	\$89/105
ATI 3D Pro Turbo PC2TV 4MB/8MB SGRAM	\$115/145
ATI Xpert@Work 4MB/8MB AGP	\$119/149
ATI Xpert@Play 4MB/8MB AGP	\$139/169
Matrox Productiva AGP 4MB/8MB	\$89/105
Matrox Mystique 220 4MB SGRAM	\$100
Diamond Monster 3D 4MB	\$165

DRIVES & MONITOR

3.2GB/4.3GB	\$190/210
5.2GB/6.4GB	\$240/265
Quantum SE 2.1GB/3.2GB Ultra IDE	\$185/195
Quantum ST 4.3GB/6.4GB Ultra IDE	\$220/275
Panasonic 1.44 MB Floppy Drive	\$28
Iomega Jaz Drive Int/Ext	\$410/540
Iomega Zip Drive Parallel/SCSI Ext	\$205/205
Iomega Internal Zip Drive (OEM)	\$129
Iomega Ditto Max Drive 3GB/7GB Int	\$298
SVGA 14"/15"/17" Color Monitor	\$179/238/430

PRINTER & SCANNER

Canon BJC-4300 Color Inkjet	\$249
Epson Stylus Color 600 Deskjet	\$345
HP 692C Deskjet	\$310
HP 6L Laser Printer	\$503
HP ScanJet 5P	\$375
Acer Flatbed Color Scanner 310+Parallel/SCSI	\$119/139
Acer Flatbed Color Scanner 610+Parallel/SCSI	\$179/199

MULTIMEDIA & MODEM

16-bit Sound Card	\$25
SoundBlaster 16/PnP	\$49
SoundBlaster 64/PnP	\$90
24X/32X CD-ROM Drive	\$90
USR 56K Fax/Data Modem int w/Voice	\$75.95
USR 33.6 V.34 ext Fax/Modem (OEM)	\$55.85
USR 56K Ext Fax/Modem w/Voice	\$125
Creative PC-DVD Kit	\$215
HP CD Writer Plus Kit 7200i	\$289
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Pentium II Asus P2L97 ATX
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CPU Intel P200MMX/P233MMX
RAM 4MB 30 pin 70ns
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RAM 32MB EDO
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only**

24X CD-ROM BUNDLE \$115
24X CD-ROM Drive, 16 bit Sound Card, Stereo Speakers

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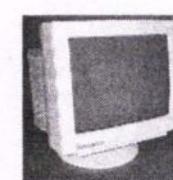
Pro:

- .26 mm dot pitch offers good resolution and generally sharp picture quality
- high refresh rates available

Con:

- short signal cord could be problematic if more distance from computer is required
- edges were a bit wavy in places, and screen showed minor ghosting
- OSD option order is a bit strange: common controls, like vertical/horizontal size and position, were at the BOTTOM of the list, forcing user to scroll through pincushion, etc., first

Daytek's DT-1726D generally provides a crisp and clear picture, with some lack of focus and a bit of distortion around the edges of the screen on the unit we tested. Although these could become problematic for some users, it's still quite a competent and reliable monitor.

**Digital Research Technologies DRMON17**

From: LinkUp Technology Inc.
Tel: 888-218-4968
<http://www.linkup.on.ca>

Pro:

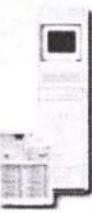
- OSD has clearly labeled buttons, and is easy to use, and certain buttons double as non-menu contrast/brightness
- picture quality is quite good for a .26 mm dot pitch display

Continued on page 65

BUSINESS SOLUTIONS *affordable prices*

Hewlett Packard

Windows NT Server
HP Netserver LH3 PII-350Mhz



Dual Capable Intel® Pentium II 350Mhz w/100Mhz bus Processor, 512KB ECC Cache, 128Mb ECC SDRAM, 27.3GB (3x9.1GB) Ultra Wide SCSI hot-swap Hard Drive, 24X CD-ROM, 1MB Video card, Windows NT Server with 5 clients.

Windows NT Workstation

HP Kayak XU

Intel Pentium II 300 MMX, 4.5GB UW SCSI Hard Drive, 64MB ECC SDRAM, 24X CD-ROM, 4MB Matrox Millennium II AGP Video, 10/100TX Ethernet, Windows NT Workstation V 4.0, 3 years warranty

\$ Call

HP Brio 8379 (MT)

Intel Pentium II 333MMX, 8GB Hard Drive, 64MB RAM, 32X CD-ROM, 56K Modem, Matrox 4MB AGP Video card, 16Bit Audio, Windows '95 and 3 Years Warranty

\$ Call

HP Vectra VL7

Intel Pentium II 266MMX, 3.2GB UATA Hard Drive, 32MB RAM, Cirruslogic 4MB Video card, 10/100BaseT NIC Interface, Windows NT Workstation 4.0 and 3 Years Warranty.

\$ Call

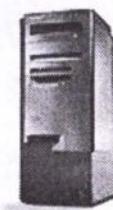
HP OfficeJet & DesignJet

635 Printer, fax, copier	\$678
Pro 1150C Printer, copier, scanner	\$999
Design Jet 430 Printer/Plotter	\$2299
DesignJet 2500CP Printer	\$13350

HP Surestore Tape Drives

Surestore Dat 8I, 8GB Int	\$1165
Surestore Dat 24E, 24GB Ext	\$1799
Surestore 2000I, 2GB Int	\$655
Surestore 5000I, 4GB Int	\$686

I
B
M



IBM Netfinity 3500

Pentium II 233Mhz, Dual processor upgradable, 512K cache, 32MB ECC SDRAM, 4.3GB Ultra Wide SCSI Hard Drive, 24X IDE CD-ROM, 10/100 PCI Ethernet Adapter, 4MB SGRAM AGP Video card, 3 yrs onsite warranty \$call



IBM PC Server 330

Intel Pentium II 300Mhz, Dual processor upgradable, 512K cache, 64MB ECC EDO, 9.1GB Ultra Wide SCSI Hard Drive, 12X SCSI CD-ROM, 1.44MB FD, Standard software, 3 yrs onsite warranty \$call

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T
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IBM PC 300GL

Intel Pentium II 266Mhz, 32MB SDRAM, 4.2 Hard Drive, 2MB Cirrus AGP Video card, Windows '95 (Monitor extra)



IBM Aptiva Computers

Aptiva E56, K6 266, 48MB, 4GB HD, 24X CD, 56K, 15" Monitor	\$1820
Aptiva E96, PII 333, 8GB HD, 96MB, 32X CD, 56K, Win'98, 15" Monitor	\$2754

Call for Proprietary memory available for Toshiba, IBM, HP, NEC and many other brand names

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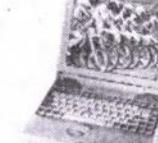
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Affordable 17-inch monitors*Continued from page 62*

- 16.1-inch viewable area is more than average
- Con:**
- slight deformity around the edges of the screen

The DRMON17 is a good unit, with a minimum of flicker and respectable image quality. Not the cheapest on the block, but reasonably close, and the image quality certainly makes it worth consideration, for those on a budget.

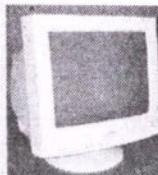
**Elco Xtreme**

From: Elco Systems
Tel: 905-470-7301
<http://www.elcosys.com>

Pro:

- monitor is an OEM from well-known Lite-On Technology
- delivers solid performance with a minimum of flicker and moire
- Con:**
- some minor ghosting noticed
- at .28 mm dot pitch, image can be a bit coarse.

With a higher dot pitch and slight ghosting problem, the Xtreme isn't perfect, but a low price and with a well-known manufacturer hiding behind the Elco label, this monitor is still a good budget-conscious alternative.

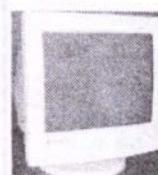
**Hyundai DeluxScan 7695**

From: Dynamic Channels Canada Inc.
Tel: 800-568-0060
<http://www.hei.co.kr>

Pro:

- .26 mm dot pitch provides high-quality display with good frequency response
- minimal flicker and moire
- Con:**
- selector for OSD split into two parts, and can be awkward to use: push button on front of monitor, and spinner wheel on underside; spinner button is also a bit touchy, reacting too fast or too slowly at times
- when screen resolution or refresh rate at adapter, monitor tends to reset ALL settings, including brightness

The DeluxScan 7695 is a monitor with great performance, with problems that are mostly ergonomic. The awkward setup of the spinner wheel for the OSD can be a bit painful to the wrist if used often. Once set up, though, it's smooth and high-performance sailing. At \$649 street price, it's priced a bit higher than most, however.

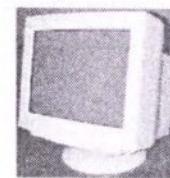
**KDS Orchestra Steel Drum**

From: Orchestra Multisystems Canada Inc.
Tel: 888-537-9001
<http://www.kdscanada.ca>

Pro:

- reliable performance with a minimum of flicker and moire
- .26 mm dot pitch
- good frequency response
- BNC connector for Mac compatibility
- Con:**
- minimal image manipulation controls on the OSD
- not really a steel drum (it makes a pleasing thump when you tap the case, though)

The oddly named Steel Drum provides a great quality display for a reasonable amount of money. More common on higher-end monitors, the BNC connectors are a real plus for Mac users.

**MAG Innovision DX700T**

From: MAG Innovision
Tel: 905-890-9465
<http://www.maginnovation.com>

Pro:

- well-known name in monitors
- top-notch quality display, at .25 mm dot pitch
- good selection of user controls, including non-menu brightness/contrast

Con:

- slight edge deformities and edge flicker on unit tested
- priced a bit higher than some

Well-known in the monitor field, MAG Innovision delivers the goods with the

DX700T, which has great image quality for the most part. Edge integrity was a bit of a problem, with some waviness and jitteriness, a good chunk of which was correctable with the OSD image manipulation.

Magitronic C-SV1701PS

From: Liuski International
Tel: 800-665-5487 <http://www.magitronic.com>

Pro:

- reasonable performance for .28 mm dot pitch
- OSD controls fairly intuitive.

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Screen type	Trinitron	Shadow mask	NA	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Trinitron
Viewable size (inches)	16	16	15.8	15.6	16	16.1	15.9	15.7	15.9	16
Dot pitch (mm)	0.25	0.26	0.28	0.25	0.26	0.28	0.28	0.26	0.26	0.25
Screen coating	AG	AG,AR,AS	AG, AR, AS	AG,AS	AG,AS	AS	AG, AR, AS	AG,AR,AS	AR	AS
Horizontal frequency (KHz)	30 - 95	30 - 69	30 - 70	30 - 70	30 - 72	30 - 70	30 - 69	30 - 95	28 - 95	30 - 70
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Picture quality at 1,024x768	very good	excellent	very good	excellent	very good	very good	very good	excellent	excellent	excellent
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Edge focus at 1,024x768	very good	very good	very good	excellent	very good	very good	very good	very good	very good	very good
Edge focus at 1,280x1,024	very good	very good	very good	very good	very good	very good	very good	very good	very good	very good
Flicker at 1,024x768	subliminal	minimal	minimal	minimal	subliminal	minimal	subliminal	minimal	negligible	minimal
Flicker at 1,280x1,024	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal	minimal
Moire at 1,024x768	some	negligible	minimal	minimal	minimal	negligible	minimal	minimal	negligible	negligible
Moire at 1,280x1,024	medium	minimal	some	minimal	some	some	minimal	some (cancelable)	some	medium (cancelable)
Convergence	excellent	very good	very good	excellent	very good	excellent	very good	very good	very good	excellent

Image Manipulation Capabilities

Pincushion	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Pinbalance	no	no	yes	yes	no	no	yes	yes	no	yes
Trapezoid pattern	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Parallelogram pattern	yes	no	yes	yes	no	no	no	yes	yes	yes
Image rotation	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Color temperature settings	yes	no	yes	yes	no	no	yes	yes	yes	yes
Other	moire, convergence		zoom		zoom		moire		convergence, moire	

Connector	D-Sub, BNC	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub, BNC	D-Sub
Dimensions (WxHxD) cm	42.2x42x44	41.5x41.4x45.3	41x43.8x45	41.2x40.5x45.5	42x44x44.5	40.9x42.1x43.4	43.7x42x44.7	41x41.9x44.7	41.1x42.4x44	40.9x42.1x46.4
Weight (kg)	23	20	18	16.5	17	17.3	17.4	17.3	18.7	17.5
Energy compliance	TC095, Energy Star	NUTEK, TCO95, Energy Star	MPR-II, Energy Star	MPR-II, Energy Star	MPR II, Energy Star	TCO95, Energy Star	MPR-II, Energy Star	NUTEK, TCO95, Energy Star	MPR-II, Energy Star	Energy Star
Contact	905-479-8336	800-228-0530	888-734-3577	800-463-6783	800-329-8351	888-218-4968	905-470-7301	800-568-0060	888-537-9001	905-890-9465
Internet contact	www.acer.com	www.adic.com.tw	www.pecanada.com	www.std.net	www.daytek.ca	www.linkup.on.ca	www.elcosys.com	www.hci.co.kr	www.kdscanada.ca	www.majinovision.com
Warranty (parts, labor)	3.1	42 months	3.3	3.3	3.3	3.3	3.3	3.3	3.1	3.1
Price	\$690 street	\$598 est. street	\$339 street	\$509 street	\$469 street	\$399 street	\$389 SRP	\$649 street	\$495 street	\$589 MSRP

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IBM/Cyrix PR200MMX
Addition To Common Features:
• Intel 430TX PCIset, flash BIOS
• 32Mb SDRAM
• 2.1Gb Ultra IDE Hard Drive
• PCI Video Card 1MB
• 15" SVGA Colour Monitor

INTEL PENTIUM MMX 200MHz
Addition To Common Features:
• Intel 430TX PCIset, DIMM Support
• 32Mb Fast SDRAM
• 3.2Gb Ultra/33 Eide
• PCI Video Card w/1Mb Ram
• 15" SVGA 0.28mm, NI L/R Monitor

\$865**\$945****15" Monitor**

0.28dpi
1024max Res.
Win95 PnP
Low Rad.
Digital control
3yr warranty



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17" Monitor
0.28dpi
1280max Res.
Win95 PnP
Low Rad.
Digital control
3yr warranty

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30bit Color
600x1200 optical
Parallel port

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Internal EIDE
with one cartridge

\$119**NxTEC~SuperGamer**

AMD K6-2MMX 266MHz
Addition To Common Features Above:
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• 4.3Gb Ultra/33 IDE
• Sound Blaster AWE64 sound card
• 120watts Shielded Speaker
• 56Flex internal voice/fax/data modem
• Intel i740 AGP video w/8MB
• 15" SVGA 0.28mm, NI L/R Monitor

\$1,285

K6-2 MMX 300MHz.....\$1,320

◊ substitute for standard feature.

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- Trident 3D AGP 4MB video
- Sound Blaster 16 PnP sound card
- 120 Watts Shielded Speaker
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- 15" Digital Colour Monitor

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Intel P2 MMX 266MHz.....\$1,505
Intel P2 MMX 300MHz.....\$1,685
Intel P2 MMX 333MHz.....\$1,860

◊ substitute for standard feature.

NxTEC-P2 Supra

Intel Pentium-II 350MHz
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- Fujitsu 4.3Gb Ultra IDE Hard Drive
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- 56k Internal Fax/Voice/Data Modem
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-16bit sound
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-1 yrs Warranty

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-2.0Gig
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-3 yrs Warranty

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disc	Recordable	
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Epson, Hewlett Packard
Lexmark, Minolta, Mita
NEC, Okidata, Panafax
Panasonic, TEC
Pitney Bowes
QMS, Ricoh, Raven
Sharp, Xerox
Texas Instruments



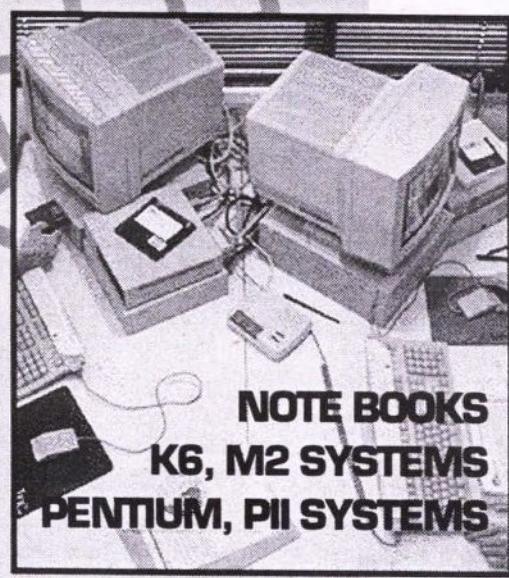
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Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask	Shadow mask
15.9	15.7	16	16	15.9	15.95	15.7	16.1	16	16	16
0.28	0.28	0.28	0.27	0.28	0.26	0.28	0.26	0.28	0.27	0.28
AG, AR, AS	AG, AR, AS	AR, AS	AG, AR, AS	AG, AS	AR	AS	AG	AG, AS	AG, AR	AG, AS
30 - 69	30 - 70	30 - 70	30 - 70	30 - 69	30 - 70	30 - 70	30 - 70	30 - 69	30 - 70	30 - 64
50 - 100	50 - 100	50 - 120	50 - 180	50 - 120	50 - 120	50 - 120	50 - 120	50 - 120	50 - 180	50 - 120
120	90	100	95	110	100	90	110	100	110	100
very good	excellent	very good	excellent	excellent	excellent	excellent	very good	very good	excellent	very good
very good	excellent	very good	very good	excellent	excellent	excellent	very good	very good	very good	very good
very good	very good	very good	excellent	excellent	very good	very good	very good	very good	very good	very good
good	very good	very good	very good	excellent	very good	very good	very good	good	very good	good
negligible	minimal	negligible	negligible	minimal	negligible	negligible	subliminal	minimal	negligible	minimal
minimal	some	minimal	minimal	some	minimal	subliminal	minimal	some	minimal	some
minimal	minimal	minimal	negligible	minimal	some	negligible	minimal	some	minimal	minimal
some	some	some	medium	medium	some	some	minimal	medium	medium	some
very good	very good	very good	excellent	excellent	very good	very good	very good	very good	excellent	very good
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
no	yes	yes	yes	no	yes	yes	no	no	yes	no
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
no	yes	yes	yes	no	yes	yes	no	no	yes	yes
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	moire		moire					zoom		
D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub	D-Sub
43.7x42x44.7	42x42x43	41.4x42.6x43.5	41x41.6x44.4	42x42.4x45.2	41x41x44.9	42x42.6x42.2	40.4x42x42.7	42x44x44.5	41x41.6x38.5	41.8x41.7x43.8
17.4	17	19.5	16.7	18.5	15.8	17	17.2	17	17.2	17.3
MPR II, Energy Star	NUTEK, Energy Star	MPR-II, Energy Star	TCO 92, Energy Star	NUTEK, Energy Star	NUTEK, Energy Star	MPR II, Energy Star	MPR II	MPR-II, Energy Star	NUTEK, TCO 95, Energy Star	MPR II, Energy Star
800-665-5487	800-387-9630	905-709-3660	800-265-0616	800-387-0564	800-747-6249	800-726-7864	800-788-2878	888-735-2244	800-888-8583	888-735-2244
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3.3	3.3	3.3	3.3	3.3	3.3	3.3	5.3	3.3	3.3	3.3
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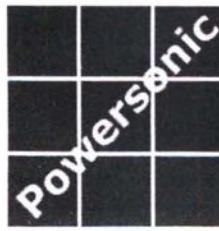
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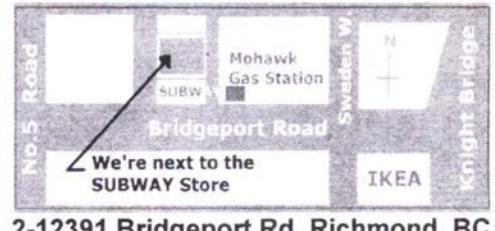
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USR 56K X2 Voice Int.....	115
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Ethernet Card PCI / ISA PnP.....	25 / 23
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VUEGO (Acer) Scan 310P / 310S.....	119 / 139
VUEGO (Acer) Scan 610P / 610S.....	169 / 189

MISC.

Affordable 17-inch monitors

Continued from page 65

Con:

- edge quality not as good as rest of screen (one corner on the monitor we tested was quite blurry)

Though the image might be a bit on the coarse side, the quality of the Magitronic monitor isn't too bad except for some problems with focus at the edges of the screen.

**Mitsubishi DiamondScan 70**

From: Mitsubishi
Tel: 800-387-9630
<http://www.mitsubishi-display.com>

Pro:

- display quality is very good for a .28 mm dot pitch.
- shallower front-to-back design great for smaller workspaces
- good selection of image manipulation controls

Con:

- fairly expensive for .28 mm dot pitch
- OSD is a bit non-intuitive

The most expensive of the .28 mm monitors this month, the Mitsubishi DiamondScan 70 is also one of the highest quality in that dot pitch. There is some moire and flicker in higher res, but otherwise a top-notch monitor.

**Monex Televideo SV200**

From: Monex Technologies Canada
Tel: 905-709-3660
<http://www.televideoinc.com>

Pro:

- OSD very intuitive, with non-menu brightness and contrast buttons
- good selection of image manipulation controls
- good quality .28 mm dot pitch
- minimal flicker, and small amounts of moire

Con:

- slight loss of focus around the edges

The Televideo SV200 has a great OSD interface, but the quality of the display as a whole may be inadequate for serious computer users. Better as a starter monitor, or for the casual user.

**Panasonic PanaSync S70**

From: Panasonic Canada
Tel: 800-265-0616
<http://www.panasonic.ca>

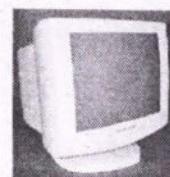
Pro:

- high quality display with next to no flicker and only some moire at higher res.
- good selection of image manipulation options in the OSD

Con:

- even at .27 mm dot pitch, image is a bit coarse.
- higher price

The PanaSync S70 is certainly a sturdy and confident monitor with a great display quality. However, the price tag may scare people away, especially with the monitor only checking in with a .27 mm dot pitch. A shallower version is also available, at a higher cost.

**Philips Magnavox 107s**

From: Philips Canada
Tel: 800-387-0564
<http://www.philips.com>

Pro:

- excellent picture quality for .28 mm dot pitch
- non OSD buttons for contrast and brightness

Con:

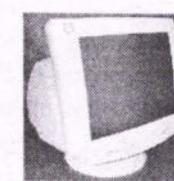
- OSD control is fairly awkward, with a push-button

on front and a hidden selector wheel underneath the chassis

- OSD requires user to scroll down to either "save" or "exit" for each sub-menu, which can be time-consuming
- moire is fairly noticeable in 1,280x1,024 resolution

The Magnavox 107s from Philips has a display quality that is excellent, with a bit of flicker and some moire being the only real distractions. The awkward OSD control configuration can cause some wrist pain while setting

up the display. At \$499, the unit provides great display quality without being excessively expensive.

**Princeton EO710**

From: Princeton Graphics
Tel: 800-747-6249
<http://www.prgr.com>

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Lease: \$35/month

- *Intel Pentium II-266MMX : \$1,075
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- *Intel Pentium II-333MMX : \$1,430

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Adaptec 2940U / 2940UW	\$205 / 255
Adaptec 1505/1522	\$65/95

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Powercom PCI BNC Network Card	\$45
3COM PCI3C900 / 905	\$90 / 90
3COM PCI3C900 Comb	\$125
Intel Pro10+ PCI 100BT	\$105

Notebooks**IBM:**

310ED P133mx/16M/1.6G/12.1DSTN/20X

380ED P166mx/16M/3G/12.1TFT/20X

380XD P266MMX/32M/5G/12.1TFT/24X

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310CDS P200MMX/32M/2G/12.1DSN/16X

490CDTPII233MMX/32M/3G/12.1TFT/20x/56K

550CDT P266MX/32M/3.8G/12.1TF/20/56K

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P166mx/32M/2G/12.1TFT/20x/56K

5280 P150/16M/1.5G/11.3DS/10x/33.6k

SECPTE:

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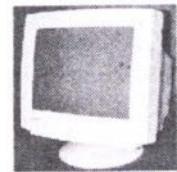
Pro:

- high-quality display, at .26 mm, with minimal flicker
- OSD makes it easy to switch between related options, while editing values

Con:

- noticeable moire at both 1,024x768 and 1,280x1,024 resolutions
- priced a bit on the high side

The EO710 is an intriguing looking monitor with a great display. Although the moire problem might be a bit distracting for some users, it is in all other respects an impressive monitor.

**Samsung 7e**

From: Samsung
Tel: 800-726-7864
http://www.samsung.com

Pro:

- great quality display, with only a little loss at the edges
- OSD controls very intuitive and buttons easy to use, including buttons that double as non-menu brightness and contrast controls

Con:

- Some moire evident at 1,280x1,024
- brightness control did not appear to have a major impact on screen

Even at a .28 mm dot pitch, the Samsung 7e delivers a great picture quality, for an amount of money that's not overly excessive. Moire has the potential to be somewhat annoying at 1,280x1,024, but lower resolutions should be top-notch in almost every way.

**Sceptre Dragon Eye D73A**

From: Alea Group
Tel: 800-788-2878
http://www.sceptre.com

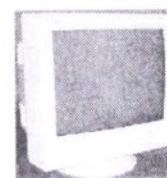
Pro:

- good .26 mm dot pitch quality at a great price
- spinner controls double as brightness/contrast
- almost no moire or flicker

Con:

- although push-and-spin OSD controls are a great idea, they can be a bit awkward at times, especially when selection requires a lot of spinning; an indentation on the front of the spinners for finger traction would improve this
- our machine had a loss of focus in the centre of the display, at 1,024x768, but this is likely something that happened in shipping

Sceptre is well-respected in the field of monitors, and you can see why, the Dragon Eye D73A offers an impressive .26 mm dot pitch, for only \$345 street price. The OSD spinner controls are a nice innovation, though it can be a bit awkward when a lot of spinning is necessary.

**Viewsonic GS771**

From: Viewsonic
Tel: 800-888-8583
http://www.viewsonic.com

Pro:

- great display quality, even at .27 mm
- shallower design (back to front) is a plus for small-

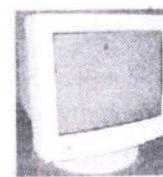
er workspaces

- OSD relatively intuitive, with a lot of image manipulation capabilities

Con:

- higher price
- moire can be problematic at 1,280x1,024

Another well-respected name in monitors, Viewsonic's GS771 comes in at the high end of the entry-level field price-wise, but delivers the goods in performance. Even with the .27 mm dot pitch, the picture quality is great, and the GS771 offers a great alternative to more expensive, higher-end monitors.

**Voxon 1728**

From: StarTek Computer Inc.
Tel: 888-735-2244
http://www.startek.bc.ca

Pro:

- low cost
- OSD easy-to-use

Con:

- image quality generally good, but edge quality can be problematic, as well as flicker and moire at 1,280x1,024
- minimal image manipulation controls
- problems with regulation (image compression and expansion) with even minor changes on the display.

Although the problem with image quality and screen regulation could be an annoyance for those who plan high usage, the price makes the Voxon worth consideration for the casual user.



The winners

**Overall:
Samsung 7e**

As far as "entry level" goes, Samsung's 7e

model goes above and beyond, with a full-featured OSD, great quality display, and a really reasonable price. Perfect for all-around use.

Performance: Cybervision C72

In the field of lower-priced monitors, the Cybervision C72 is a treat, offering an outstanding .25 mm picture quality, excellent functionality in the OSD, and price that's not too excessive. A great choice for someone who demands a lot from a monitor, but doesn't have the budget for a "high-end" unit.

**Price/Performance (tie):
AOC Spectrum 7Vir and
Sceptre Dragon Eye D73A**

This month, both the AOC and the Sceptre monitors offer excellent price/performance ratio. Though it has a coarser display, the AOC still has a great picture, and has a lot of features to boot. The Sceptre monitor offers a finer dot pitch, but carries fewer OSD features. Both offer a lot of monitor for very little money. □

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 Win95 Keyboard & Mouse &
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***** The Legend continues *****

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AMD K6 233/266/II266/II300 119/169/209/285	

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SCSI Quantum 4.5GB UW 7200rpm	638

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17" PanaSync 0.27dp/0.25dp	520/656
17" Sony 200es 0.25dp	699
19" Proview 0.26dp	699
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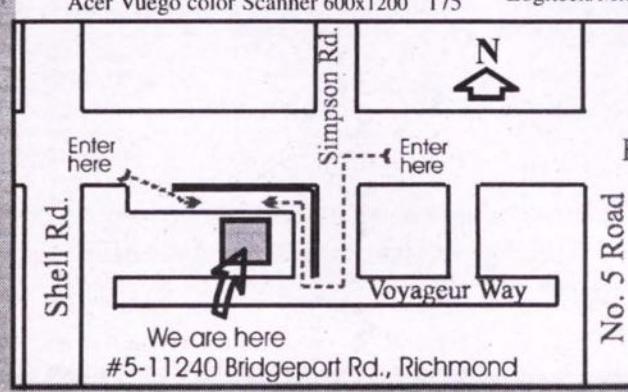
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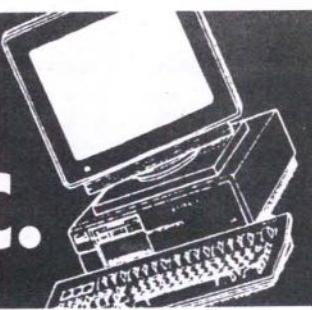
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The higher end of 17

By Sean Carruthers

A few of the monitors we received were a bit out of the range we had asked for initially, and are included here for informational purposes.



Compaq V75

From: Compaq Canada
Tel: 800-567-1616
<http://www.compaq.ca>

Pro:

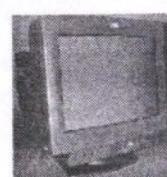
- excellent display quality, with good picture and next to no flicker or moire
- USB port for running keyboard and mouse through monitor
- separate brightness/contrast spinners
- top brand name
- relatively inexpensive, as 'performance' monitors go

Con:

- minimal OSD controls
- OSD control button layout is counter-intuitive: the + key is located BELOW the - key.

Although a bit thin in the OSD, the Compaq V75 monitor comes through in sheer performance, with a solid and high-quality display, all for a fairly low price (for the performance line). The USB port is a nice touch.

Eizo is known for creating high-performance monitors, and the FlexScan TX-C7 is no exception to this. The monitor has a very crisp picture, great frequency response and a good selection of features. Definitely a great choice for graphic work.



IBM P72

From: IBM Canada
Tel: 800-465-7999
<http://www.ibm.com/ca/>

Pro:

- picture quality is exceptional
- black casing provides good contrast to image on screen, for better clarity
- brandname support
- full range of image manipulation controls

Con:

- black control buttons "disappear" against black monitor casing, making use a bit difficult; buttons are also a bit on the small side, which makes use awkward

From Big Blue comes "Big Black," the only monitor we received that strayed from the standard off-white color. The contrast of the casing makes the picture quality stand out even more than usual, being a monitor of outstanding quality from the get-go. The \$1,140 suggested retail price is pretty steep, but if money is no object, this monitor is a dream.



Eizo FlexScan TX-C7

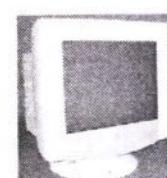
From: Dynamic Channels Canada Inc.
Tel: 800-800-5202
<http://www.eizo.com>

Pro:

- .25mm Diamondtron display offers superior image quality
- automatic setting control is one of the most accurate tested
- BNC connector for Mac compatibility
- OSD control button is a panel that tilts in the four compass directions, with a centrepoint as "click"—very intuitive

Con:

- OSD control panel is a bit touchy; easy to click "centre" by mistake when going for one of the directional arrows
- some ghosting evident on unit tested
- a bit on the heavy side



LG Flatron 78FT

From: LG Electronics
Tel: 888-542-2623
<http://www.lgeus.com>

Pro:

- astounding .24 mm dot pitch
- competitive pricing
- good frequency response
- separate brightness/contrast spin wheels

Con:

- slight image distortion around edges of the screen
- two-tone coloring of case (off-white and blue-grey) can be a bit distracting
- moire a bit problematic at 1,280x1,024

The "G" in LG Electronics stands for Goldstar, the name under which LG's monitors

Continued on page 77

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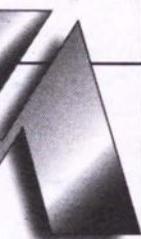
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Viewable size (inches)	16	15.8	16	16	15.6	16	16
Dot pitch (mm)	0.26	0.25	0.25	0.24	0.25	0.25	0.25
Screen coating	AG, AS	AG, AS	AR	AG, AS	AS	AG, AR	AG, AR, AS
Horizontal frequency (KHz)	31.5 - 69	27 - 92	30 - 85	30 - 85	31 - 82	30 - 92	30 - 95
Vertical frequency (Hz)	50 - 100	50 - 160	50 - 150	50 - 160	55 - 120	48 - 160	50 - 160
Max power consumption (W)	115	115	120	120	NA	120	130
Picture quality at 1,024x768	excellent	excellent	excellent	excellent	excellent	excellent	excellent
Picture quality at 1,280x1,024	excellent	excellent	excellent	very good	very good	very good	excellent
Edge focus at 1,024x768	very good	excellent	excellent	very good	excellent	excellent	excellent
Edge focus at 1,280x1,024	very good	excellent	excellent	very good	very good	very good	very good
Flicker at 1,024x768	negligible	subliminal	subliminal	some	subliminal	minimal	minimal
Flicker at 1,280x1,024	minimal	minimal	minimal	some	minimal	minimal	subliminal
Moire at 1,024x768	negligible	minimal	minimal	minimal	minimal	negligible	some
More at 1,280x1,024	minimal	some	some (cancelable)	medium	medium	medium (cancelable)	medium
Convergence	excellent	excellent	excellent	excellent	very good	excellent	excellent

Image Manipulation Capabilities

Pincushion	yes	yes	yes	yes	yes	yes	yes
Pinbalance	no	yes	yes	yes	yes	yes	yes
Trapezoid pattern	yes	yes	yes	yes	yes	yes	yes
Parallellogram pattern	no	yes	yes	yes	yes	yes	yes
Image rotation	yes	yes	yes	yes	no	yes	yes
Color temperature settings	no	yes	yes	yes	yes	yes	yes
Other	moire	convergence	zoom, moire, convergence	zoom, moire	zoom, moire, convergence	zoom, moire, convergence	convergence
Connector	D-Sub	D-Sub, BNC	D-Sub	D-Sub	D-Sub	D-Sub, BNC	D-Sub, BNC
Dimensions (WxHxD) cm	43.9x42.1x43.9	41x41.3x43.9	40.8x44.1x43.4	43.5x45.5x46.6	40.3x42.6x45.3	40.6x43.2x42	41.8x43x44.6
Weight (kg)	20	21	19.2	21	19.5	19.5	18.5
Energy compliance	TCO 95, Energy Star	TCO95, Energy Star	NUTEK, Energy Star	MPR II, Energy Star	NUTEK, Energy Star	NUTEK, TCO 92, Energy Star	TCO 95, Energy Star
Contact	800-567-1616	800-800-5202	800-465-7999	888-542-2623	800-366-0476	800-961-7669	888-843-9889
Internet contact	www.compaq.ca	www.eizo.com	www.can.ibm.com	www.lgeus.com	www.nec.com	www.sony.ca	ttxmonitor.com
Warranty (parts, labor)	3,1	3,3	3,3	3,3	3,3	3,3	3,3
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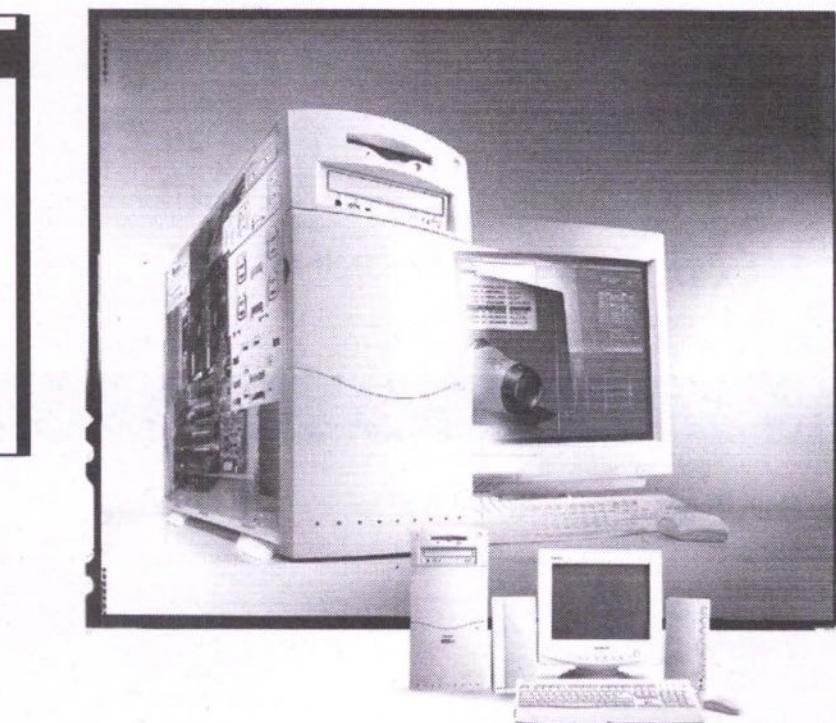
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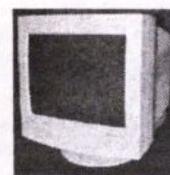
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The higher end of 17

Continued from page 72

previously sold. Along with the new name, the 78FT introduces LG's new Flatron technology, with an ultrafine .24 mm dot pitch. While the picture quality is great, the coloration of the outer casing is a bit distracting, with the lower blue-grey panel tending to draw the eye away from the screen. A minor complaint about an otherwise fine monitor, though.

**NEC MultiSync E700**

From: Packard Bell-NEC
Tel: 800-366-0476
<http://www.nec.com>

Pro:

- high-quality .25mm display
- backed by the NEC name
- reasonably low cost for a performance monitor

Con:

- a few less image control features than usual on the higher end models, and an OSD hampered by the slightly confusing "proceed" button
- at 15.6 inches, viewable area is smaller than most.
- moire can be a problem at 1,280x1,024

Delivering high performance for a low cost, the MultiSync E700 checks in with fewer features and a smaller viewable area than some of the other monitors, but otherwise provides top-notch performance.

**Sony GDM 200PS**

From: Sony Canada
Tel: 800-961-7669
<http://www.sony.ca>

Pro:

- .25 mm dot pitch Trinitron provides outstanding picture quality
- full range of image manipulation capabilities
- BNC connector for Mac compatibility
- Sony invented the Trinitron technology!

Con:

- one of the higher-priced monitors
- moire problematic at 1,280x1,024

One of the biggest names in technology in the world, Sony's GDM 200PS is a nice piece of technology, with a great display quality and a ton of features. With a \$1,099 street price, it's not cheap, but it's backed up by Sony quality.

**TTX 8792UA**

From: TTX Canada Inc.
Tel: 888-843-9889
<http://www.ttxmonitor.com>

Pro:

- high quality .25 mm dot pitch display
- OSD controls feature separate buttons for menu categories, for easier navigation
- BNC connector for Mac compatibility
- non-menu brightness/contrast buttons
- competitive price

Con:

- moire problematic, especially at 1,280x1,024

TTX's 8792UA model offers a lot of features for a budget price. The three separate menu buttons for "picture," "color," and "status" are a nice feature, as they all activate the OSD in the appropriate place, and make navigation a breeze. □

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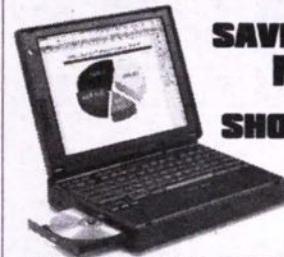
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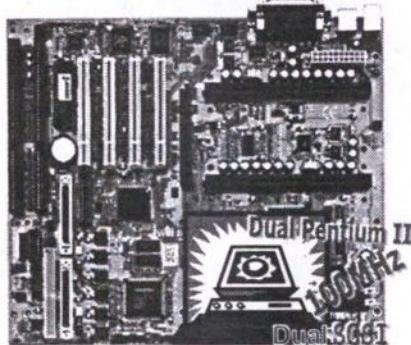
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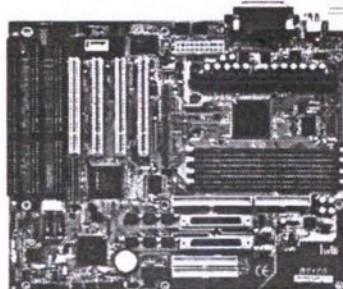
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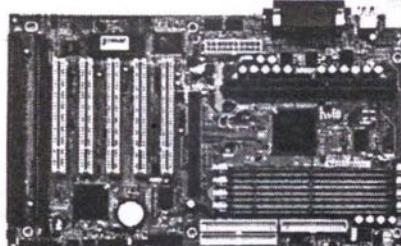
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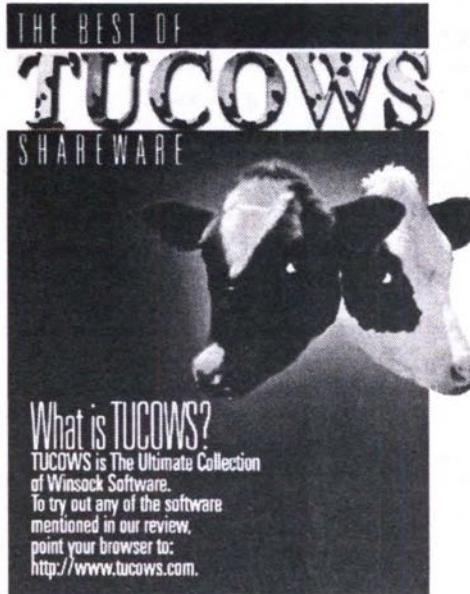
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Windows themes free and easy



By Scott Swedorski

I have been watching the great Windows debate at the U.S. Department of Justice with a mixture of dismay and amusement. Some of the points being made may be valid, but it seems to me that the issue of the appearance of the desktop should be a non-issue. It's pretty easy to modify the desktop and startup screens. Even a beginner can do it, using Themes designed for Microsoft Plus (which is now included in Windows '98).

Themes are collections of icons, graphics, and sound files that combine to give a specific look and feel to the a computer's desktop. You can turn your PC into a shrine to your favorite cartoon character, or make it look like a *Star Trek* terminal. You can even make it look like a Mac! Windows 95 users have been able to customize their computers, and programmers have been cranking out hundreds of new Plus Pack themes for months now. You can download more than 1,000 different themes at our TUCOWS's spin-off site, FreeThemes at <http://www.freethemes.com>.

Creating your own desktop theme is not nearly as difficult as you might think. It is simply a matter of putting together the multimedia you want. Once you've decided on a theme, you need to find the sounds, images, icons and cursors you want to use. Visit Yahoo, AltaVista, or InfoSeek and you will find many pages on your favorite subjects. Remember that most images and sounds in Web pages, commercial music, TV shows and movies are copyrighted. Before you publish your theme, approach any original authors or copyright holders for permission.

Choose colors and icons that complement each other. A wild barrage of colors might look cool, but it can be hard to look at for a prolonged period of time. I recommend 800x600, because it is a popular size and allows for minimal stretching and distortion at either higher or lower resolutions.

The most striking aspect of any desktop

theme is the wallpaper. Start with a large, high-resolution image and shrink it down after you have modified it. It is always better to reduce the size of the original than to have to stretch the image to fit.

The approximate file size of your background will depend greatly on the format you save it in. JPEG images compress without significant loss in image quality.

Once you've chosen a background image for your theme, you can decide on the color scheme. Be especially careful to maintain some sort of contrast between the various elements of the menus. If you intend to use a low-color theme, one that is 256 colors or fewer and conforms to the standard Windows color palette, you should use a 256-color palette.

When you choose a font, pick one that is commonly distributed with Windows. That way you won't need to include the font if you wish to share it, and you won't have to worry about copyright laws. Font color should contrast with the rest of the colors, especially those of the menus, enough to be readable from 90 cm (3 ft.) from your screen. Be careful not to choose a font that becomes distorted at lower resolutions.

You will also have to make icons, unless your theme already exists in another form. You can get image editors online at TUCOWS. The most popular is Paint Shop Pro. Finding the right picture to use as an icon can be difficult. Look for images that have a large square portion that will be clear when shrunk down. Once you have chosen the image, make it as square as possible before resizing the image to 48x48 pixels.

After it has been reduced, you will have to reduce the number of colors to 256. When doing so, tell the program to optimize the image and to use error diffusion. That will keep the icon as close to the original as possible and still benefit from the color reduction. Save the image as a .BMP file.

Open your icon-editing software (MicroAngelo Studio is a good choice) and open a new 48x48, 256-color icon. In the edit menu, select OPEN AS BITMAP and select the file saved above. Save the icon and you are done. Remember, there are at least four icons to make; My Computer, Network Neighborhood, Recycle Bin—Empty, and Recycle Bin—Full.

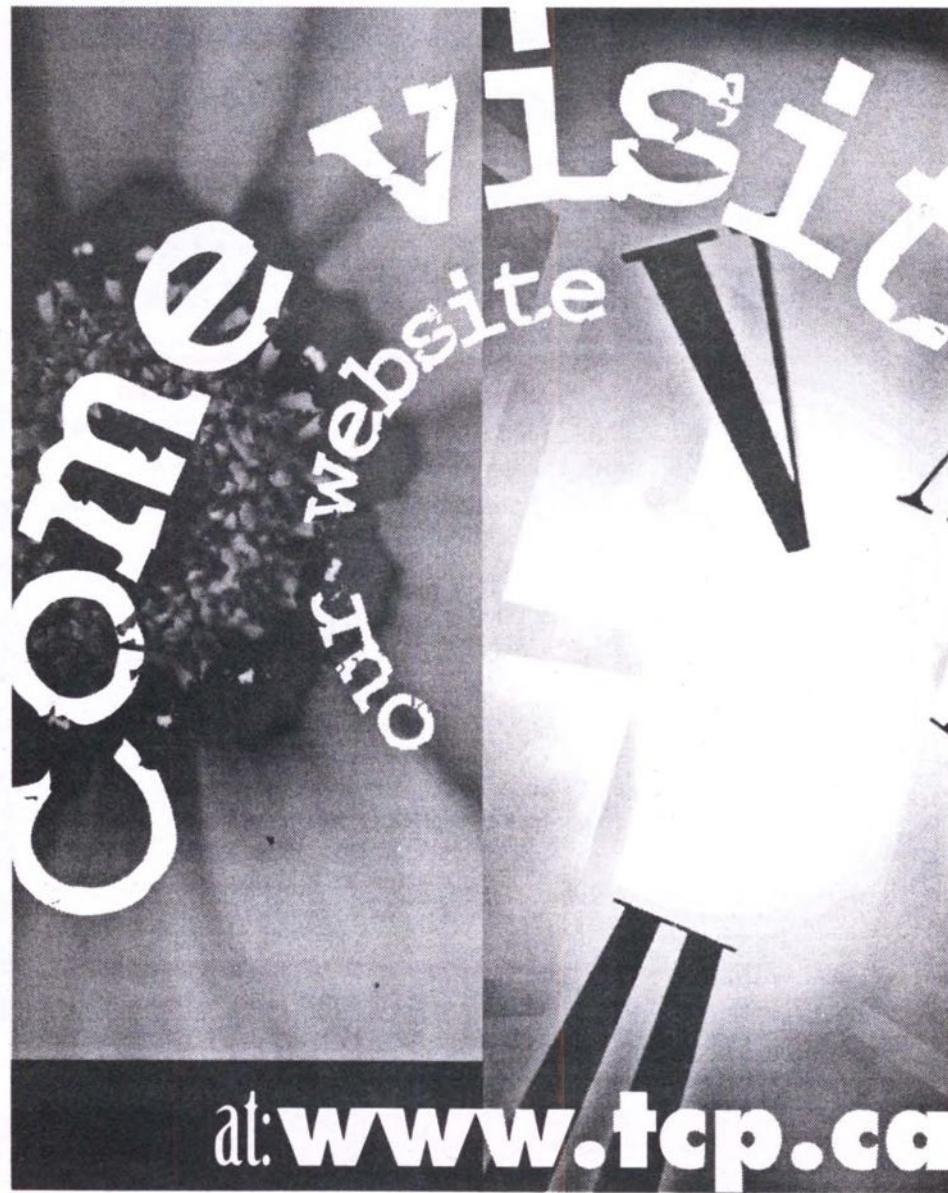
Cursors are possibly the most difficult part of making an original theme, and most people choose to edit a pre-existing set of cursors and use them as their own. If you are the adventurous type, you'll find the process of creating them from scratch is similar to the one above for icons (You can use an icon editor like MicroAngelo to make animated cursors).

One of the key elements to any desktop themes are sounds. Making your own sounds is a simple process. You will need a sound editing program. You can find a variety of these programs at TUCOWS. Once you have decided on the software, you can edit existing sound clips you found while gathering multimedia from the Web, or record your own.

Try to select short sounds for Asterisk, Exclamation, Default Sound, and Menu Sound, two to three seconds long at most, preferably one second or less. The Menu Popup sound repeats very frequently, and often new themes (or at least the sounds they use) are discarded after just a few irritating bounces through the menu.

Do not set a sound for open program! When

Continued on page 105



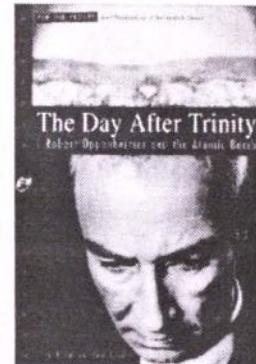
The end is near (again)!

By Ross MacDonald

Anyone familiar with Voyager's catalogue of CD-ROMs will have noted a propensity toward the calamitous. In these pages in the past we've looked at Voyager discs dealing with pollution, environmental degradation and the impact of human's infestation across the face of good Mother Earth. In each case, the author of those discs prophesy the end of the world if big bad man doesn't change his ways. And it's alarmingly inferable that they might be right.

The Day after Trinity

From:
The Voyager Company
in Canada:
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Adding to this library of doom is *The Day After Trinity*, a less histrionic, but nevertheless ominous documentary about the Manhattan Project and its chief architect, J. Robert Oppenheimer. Like the other Voyager discs, this is actually a transcription of an existing documentary onto CD-ROM, in this case Jon Else's 1980, 90-minute, Academy Award nominated *Day After Trinity* (Trinity is the name of the site at which the first bomb was exploded in Alamogordo, N.M.).

Somewhat like an A&E TV special, the film uses lots of archival film footage and photographs to show the events leading up to that explosion, but goes further in following the effects through the Cold War (which, you must remember, was still raging in high profile at the time Else's film was made). Equally, the subsequent progressive decline of Oppenheimer's life is documented.

But, of course, being a CD-ROM, Voyager has added quite a few extras that lend this specialized disc a broader appeal. In addition to the documentary film, there is commentary by the Else and experts Michael Renov and B. Ruby Rich. You'll also find the text of many Manhattan Project files that were once classified top secret, as well as numerous documents from the FBI.

The movie itself is structured to keep your interest and the additional CD-ROM materials only enhance the experience. Though the atomic bomb and the Cold War may not be of interest to absolutely everyone, the strategic pricing employed by Voyager can only encourage us to expand our libraries toward a more eclectic and diverse sensibility. □

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The citizens of Canada and the world have contributed magnificently to The Terry Fox Run for the past 17 years. In 1997 you raised over \$14 million. Through your efforts Terry's dream of finding a cure for cancer will be realized.

For more information on the Run in your community please contact:

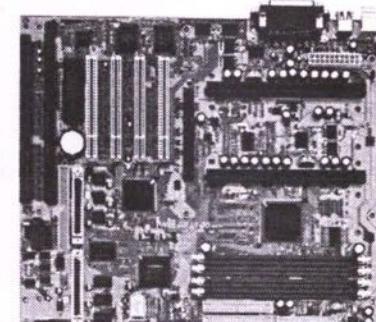
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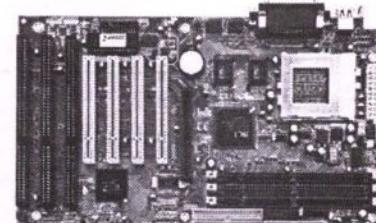
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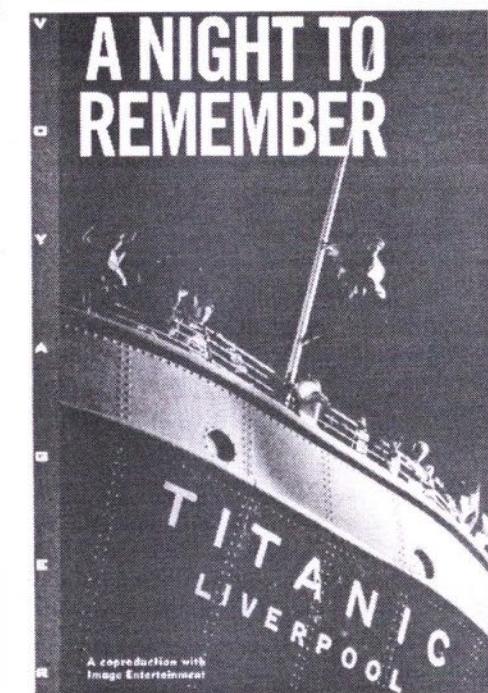
bargain to remember

Oh, they built the ship Titanic
To sail the ocean blue
And they thought they had a ship
That the water wouldn't go through
But the good Lord raised his hand
Said, the ship would never land
It was sah-ad when the gray-ate ship went down
Oh it was sad (so sad)
Oh it was sad (so sad)
It was sad when the gray-ate ship went down
To the bottom of the
Seeeeeeeeeeeeeeeeeeeeeeeeeeeeee
Husbands lost their wives, little children lost their
lives
eeeeeeeeeeeeeeeeeeeeeeeeeeeeeeee
It was sad when the gray-ate ship went down.
Ker-plunk! It sunk! Like a skunk!

—Campfire song

By Ross MacDonald

True Titanophiles will immediately recognize that this disc is about their favorite mass exodus to Davy Jones' locker. DiCapriophiles, on the other hand, won't have a clue.



A Night to Remember

From: The Voyager Company
in Canada: 299 Queen St. W, Toronto, ON M5V 2Z5
Tel: 416-591-7400 Fax: 416-591-7465
<http://www.citytv.com>
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A Night to Remember is the title of what is arguably the best Titanic movie made to date despite the more recent product released by the king of the world. An account of the sinking told in sort of, maybe-ish, documentary style, this 1958 British production features the

Continued on page 82

No digicam in Polaroid's imaging kit

By Ross MacDonald

This alternative to a digital camera constitutes little more than a Polaroid Spectra AF camera boxed together with an Artec AS6E flatbed scanner. The combination is ostensibly a way to take photos and get them into your computer as quickly and easily as with a digital camera—but at a much lower cost. Though definitely cheaper to buy, the Polaroid setup just doesn't deliver enough oomph either in image con-



trol or quality to qualify as a genuine substitute for a digital camera.

Which is not to say that the Spectra AF isn't a nice camera. It's easy to use, has some controllable functions (flash control, self timer, autofocus ON/OFF) and folds up into a not unwieldy size. But the instant pictures it delivers are unpredictable and, unlike a digital camera, unerasable if you don't like the results.

Polaroid Digital Imaging Kit

From: Polaroid Canada Inc.
350 Carlingview Dr., Etobicoke, ON M9W 5G6
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Platform support: Windows 3.1/95, Mac OS
Software: Adobe PhotoDeluxe, Adobe Acrobat Reader, Polaroid Direct Photo Reader
Camera dimensions: 7.8x13.9x17.3cm (3x5.5x6.8 in.)
Weight: 800 g (28.5 oz) without film pack
Pros: Camera produces prints instantly. Batteries are built into each film pack. Scanner is compact and simple with nice software bundle.
Cons: Polaroid pictures are fine for snaps but not particularly high-res or "high" anything else. Also, if you already own a scanner you're happy with, you'll end up with two.

Couch potatoes move to the Net

WASHINGTON, D.C. (NB)—Internet and online service usage is taking time away from other sedate activities such as reading and watching television, and even from exercising, according to a new report from U.S.-based research firm The Strategis Group.

Strategis Group said a "substantial" 64 percent of Internet users indicated in its survey that their use of the Internet has reduced the amount of time they spend watching television or using the VCR.

What's more, more than two-thirds of the Internet users surveyed said they spend less time on all leisure time and social activities now than before they used the Internet. Forty eight percent of Net surfers spend less time on reading, 26 percent devote less time with family or friends, and 22 percent sweat less from exercise.

The Strategis Group survey also confirmed, to a certain extent, the image of the

Net surfer being a bleary-eyed person existing on coffee when they should be sleeping: 29 percent said they accessed the Internet instead of getting sack time.

In addition, more than one-fourth of users surveyed said the Internet was "extremely important" to their daily lives. And almost as many people said the Net was "somewhat important" in their day-to-day activities.

"Soon the Internet will be as important to users as television, books, newspapers, and magazines," says Matt Page, Strategis Group Internet consultant.

Results for the survey were based on a "nationally representative" (of the United States) survey sample of more than 1,000 households, including over 500 Internet users, Strategis Group added.

Contact: Strategis Group
<http://www.strategisgroup.com>

According to the specs, you can be as close as 61 cm (2 ft.) to your subject, but I found pictures taken at or near that range were either washed out by the auto flash or too dark when the flash was turned off. Color reproduction is pretty good and much better than the Polaroids of yore, but image quality is only marginal, which directly affects what comes out of the scanner.

The scanner is a nice little flatbed unit that's extremely easy to hook up and begin using. It has an optical resolution of 300x600 but that can be interpolated on a sliding scale up to as high as 4,800x4,800, which, though

it sounds impressive, creates huge multi-megabyte image files that aren't, ironically, proportionately better than the much lower res scans.

Polaroid offers this "kit" as an alternative to true digital photography for those on limited budgets or who aren't particularly comfortable with the newer technologies. This combination of camera, scanner and software will do the job, but the results may leave many wishing they'd sprung for the extra \$300 or \$400 for an entry-level digital camera. Still, the Flatbed Digital Imaging Kit warrants consideration for budget-minded shoppers. □

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StudioStar prime choice for accurate color

By Graeme Bennett

Although you'd never know it by looking at the Agfa StudioStar's skimpy documentation, the StudioStar is a 30-bit color scanner with 1,200x600 optical resolution, excellent image quality and a solid collection of color-calibration and image-correction tools. The StudioStar eschews the consumer-oriented software bundle of Agfa's lower-priced models for a package that includes Photoshop 4.0 (our box included the full version; a less expensive

package is available with Photoshop LE, OmniPage Limited Edition, and Agfa's suite of Foto software: FotoTune Scan, FotoLook, FotoFlavor, and FotoSnap. A Fax/Copy/Print utility is also provided, along with an IT8 (color calibration) reference target.

Our package also included a SCSI terminator, power cables (inexplicably, a strange-looking European one as well as a standard North American three-pronger) and a four-foot 25-to 50-pin SCSI cable.

As it did with the original SnapScan, Agfa has chosen to include a cheapo ISA SCSI inter-

face (an Adaptec 1505AE) card as part of the PC bundle. While Adaptec continues to be our favorite provider of SCSI cards, the fact that this card has caused us difficulties in the past made us a little apprehensive about it.

Agfa StudioStar

From: Agfa

<http://www.agfa.com>

Street price: \$750 includes Photoshop LE (\$980 includes full version of Photoshop)

Pros: Plug and play, good software bundle including Photoshop 4.0, OCR, fax, copy and print software, excellent color accuracy.

Cons: Skimpy printed documentation.

necing the scanner or, if it is already connected, before turning it on. When drivers are pre-installed, Windows 95 or 98 knows what driver(s) to load when its plug-and-play routine detects the new hardware. The StudioStar is also compatible with Windows 3.x, NT and Macintosh if your OS preferences lay outside the Windows 95 mainstream.

The included FotoLook software automatically installed and configured a TWAIN driver that allowed scans to be directly imported into Photoshop. The software conveniently allowed previews to be zoomed, rotated and color-adjusted, and image optimization was performed automatically. Based on our experience with Agfa's less expensive models, we'd have to say the extra money spent on a StudioStar is cash well spent for those who want a scanner with good color accuracy and trouble-free performance. □

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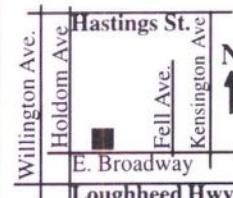
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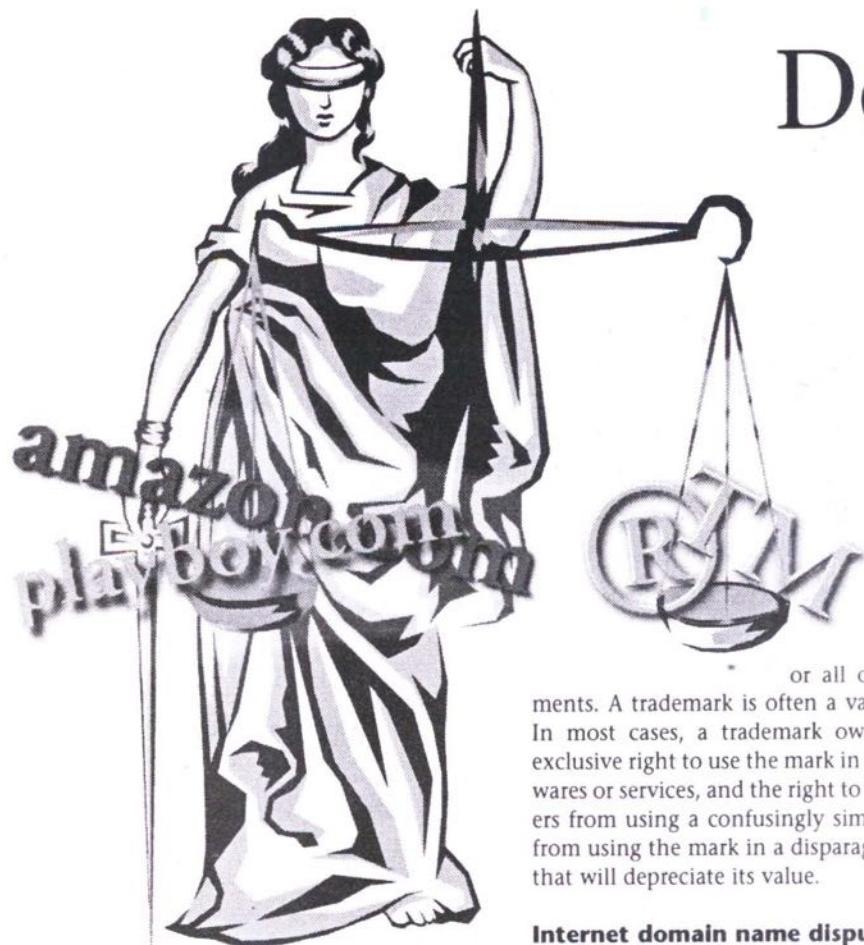
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By Brad Freedman

The growth of the Internet has been accompanied by new forms of intellectual property rights infringement, including the misappropriation and misuse of famous trademarks and trade names as Internet domain names and Web site meta-tags. Recent court decisions confirm that courts will use conventional legal principles to prevent the misuse of trademarks in cyberspace.

Trademarks

A trademark is a distinctive mark used by an individual or entity to identify its wares or services and distinguish them from the wares or services of others. A trademark may be a word, design, slogan, number, initials, acronyms, mnemonics, colors, or a combination of some

or all of those elements. A trademark is often a valuable asset. In most cases, a trademark owner has the exclusive right to use the mark in respect to its wares or services, and the right to prevent others from using a confusingly similar mark or from using the mark in a disparaging manner that will depreciate its value.

Internet domain name disputes

Domain names are simple words that substitute for the numeric Internet addresses of sites on the World Wide Web. They are generally assigned and registered on a first-come first-serve basis by a number of organizations in Canada, the United States and elsewhere. Domain names serve not only as easy-to-remember addresses, but may also incorporate key trademarks and names, and may acquire considerable goodwill. Examples of easily recognizable domain names are cbc.ca (for the Canadian Broadcasting Corporation), cnn.com (for Cable News Network), and coca-cola.com.

There have been a number of well-publicized disputes and lawsuits regarding the right to use commercially valuable domain names. Many of those disputes result from deliberate domain name grabbing by so-called "cyber-squatters" or "cyber-pirates" who register famous marks and names as domain names and then offer to sell them to the legitimate trademark owners and others. In most

instances, trademark owners have sought to protect their marks and names from misuse by invoking statutory and common law trademark rights.

Meta-tag misuse

Meta-tags are codes used by Web page authors to provide narrative or key word descriptions of their Web pages. Meta-tags are normally not seen by users. However, they are used by some search engines and their robots to identify, index, and catalogue Web pages. Meta-tags can be used to describe Web page contents in a misleading way and thereby manipulate search engine results in order to lure users to a Web page.

Recent decisions

The April 1998, United States 9th Circuit Court of Appeals decision in *Panavision International v. Toeppen* is the first American appellate court ruling on a domain name dispute. Toeppen registered more than 100 famous names and marks as domain names, and offered to sell them to the rightful trademark owners. When movie equipment company Panavision complained about Toeppen's registration of the panavision.com domain name, Toeppen suggested that paying him \$13,000 for the domain name was cheaper than suing him. Panavision sued.

The Court of Appeals held that Toeppen's "scheme to register Panavision's trademarks as his domain names for the purpose of extorting money from Panavision" violated federal and state laws against trademark dilution. Toeppen was ordered to transfer the domain name to Panavision.

The decision is significant for a number of reasons: (1) it confirms that traditional trademark laws govern actions in Cyberspace; (2) it recognizes the commercial value and importance of domain names and the use of trademarks as domain names; and (3) it confirms that courts may assert jurisdiction over persons in other states when their Internet activities are directed to, and cause harm to, persons in the court's jurisdiction.

The November 1997 English High Court decision in *Marks & Spencer plc v. One In A Million* also held that cybersquatting violates trademark laws. One in a Million registered numerous famous names and marks as domain names, and offered to resell them to interested purchasers. Marks & Spencer sued over the defendant's registration of domain names marksandspencer.com and marksand-spencer.co.uk. The court granted an injunction requiring the defendant to transfer the domain names to Marks & Spencer on the basis that the defendant's conduct constituted passing off and trademark dilution.

The court held that "any person who deliberately registers a domain name on account of its similarity to the name, brand name or trademark of an unconnected commercial organization must expect to find himself on the receiving end of an injunction to restrain the threat of passing off, and the injunction will be in terms which will make the name commercially useless to the dealer."

The March 16, 1998, U.S. District Court for the Central District of California decision in *Avery Dennison Corp. v. Sumpton and Free View Listings Ltd.* involved a claim against a

Continued on page 90

Domain name disputes in Cyberspace

Cyberspace presents challenges to the protection of trademarks and trade names

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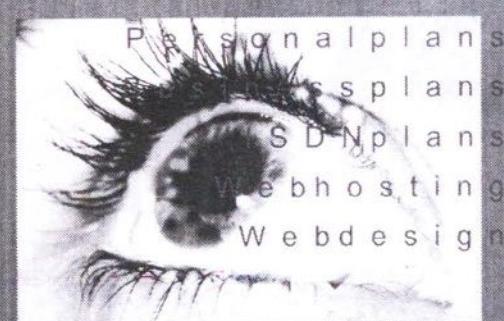
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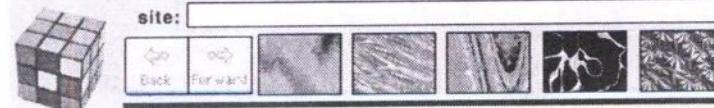
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GrimJack's top 10 gaming sites

WELCOME TO WEB WATCH



GrimJack is a Toronto-based computer gaming addict who moonlights in the computer industry when he isn't playing Quake II: Capture the Flag on the Internet. His top 10 gaming Web sites are:

1. Blue's News • Probably the best gaming news hound, Blue started out covering Quake and has expanded his focus to encompass most action games. This site is updated several times a day at all hours—if it's news you'll find it here.

<http://www.bluesnews.com>

3. Planet Quake • Another hosting site, this one is home to another collection of amateur modifications, news sites and general gaming information pages. It is somewhat hard to navigate, but there's a lot of content here if you take the time to wade through it.

<http://www.planetquake.com>

4. Planet Unreal • Probably the most comprehensive Unreal news site, and if it's not here there's certainly a link to it from here. Again, the layout leaves something to be desired, but the content makes it worthwhile.

<http://www.unreal.org>

5. Gaming Insider • Ever want to see the other side of the gaming community? Maintained by an anonymous gaming insider who pulls no punches, the information contained here should be taken with a grain of salt, but it certainly provides an interesting read.

<http://www.gaminginsider.com>

6. Online Gaming Review • A commercial game review site—if you want to get some information on the latest releases, this is the first place you should check.

<http://www.ogr.com>

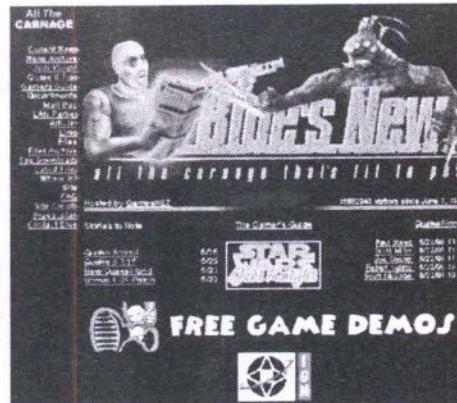
7. Captured.com • Host to modifications based on my favorite form of Quake mod, "Capture the Flag." This site covers many different versions of the game and keeps you up to date on the latest developments.

<http://www.captured.com>

8. Voodoo Extreme • This is a good site if you're looking for information on 3D hardware or general industry news.

<http://www.voodoextreme.com>

Continued on page 104



2. Stomped • A hosting site, Stomped is a collection of fan sites and covers just about every popular game currently released or in development. Stomped is also the home of my favorite plan tracker, which seems to be much more up-to-date than the one offered on Planet Quake.

<http://www.stomped.com>

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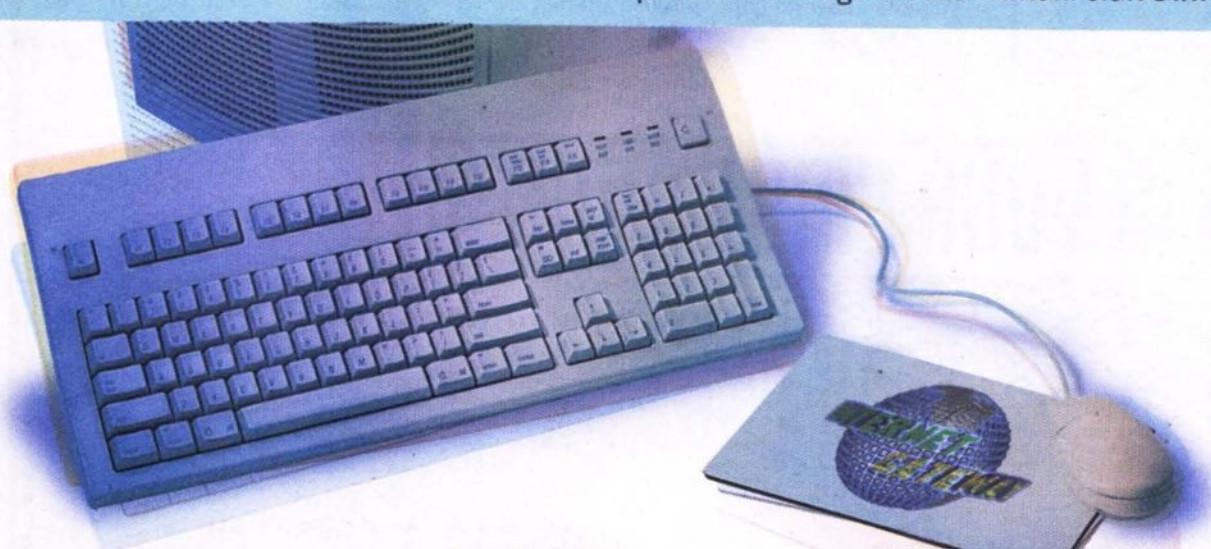
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Weaving your own Web site: Part XXXV

By Keith Schengili-Roberts

Last issue, we discussed building a basic Web "tool chest"—a collection of favorite tools to help you build and maintain your Web site. Despite claims to the contrary, there is still no single Web-building tool that will do everything. You have to pick and choose tools that do a particular aspect of Web weaving very well, and use them on your Web pages as required.

In this article we will look at some more tools (largely shareware) to add to your tool chest. Don't just take my word for it though—

Building a tool chest: Part II

test them out and if you find something that better fits your needs, go for it.

Web graphic tools

Your tool chest should have several Web graphics tools. You can get high-end commercial products that do everything, or shareware ver-

sions that do particular graphical elements well.

Generally speaking, more expensive tools offer more functions and are more reliable. Luckily for Web authors who don't want to invest a lot of money in graphic design, both Paint Shop Pro and LView can be downloaded from the Internet. They are both shareware titles (so if you find you use them regularly, it is important that you register the software). For the Web author who has some cash to spend, Adobe Photoshop (for Macintosh or PC platforms) is the graphics package of choice for most serious professional designers.

The following is a list of popular Web graphic tools and where they can be obtained on the Web.

Paint Shop Pro by Jasc

Paint Shop Pro is a favorite among Web authors for several reasons: it is shareware, supports over 30 image formats, offers simple drawing tools, and is easy to use. Chances are if you have tried out several HTML (hypertext markup language) editors, you may have already run across this program. Paint Shop Pro is available from Jasc on the Web at <http://www.jasc.com/psp.html>.

LView Pro by MMedia Research

LView Pro is another popular shareware graphics tool. Though arguably not as powerful as Paint Shop Pro, LView Pro is useful for viewing graphics and making simple adjustments, such as adding transparency, interlacing, and minor editing. LView Pro is available from MM Media Research at <http://www.lview.com/>.

PhotoImpact GIF Animator by Ulead Systems

GIF Animator is a great utility for creating animated GIF images. The interface is simple and easy to use, and allows authors to create GIF animations containing any number of frames and speed rate. GIF Animator is available in a 15-day trial version as well as in the commercial version. The latest product information about GIF Animator can be found at the Ulead Web site under PhotoImpact Web Utilities at <http://www.ulead.com/webex/pi4startme.htm>.

LiveImage by LiveImage

Need to create client-side image maps (Web graphics with "hot spots" that link to other pages on your Web site)? Look no further. LiveImage simplifies the process of mapping coordinates for uniform resource locators (URLs, also known as Web site addresses). This type of utility is getting more and more common in integrated HTML editors (HomePage and HoTMetal are examples), but if you need a single-purpose tool only occasionally, this is the one to get. You can download a free two-week trial version of the software from LiveImage at <http://www.mEDIATEC.com/>.

Adobe Photoshop

Adobe Photoshop is the Cadillac of image tools for the Web. Its graphic tools are not restricted to Web use, though. Electronic publishers and graphic artists all over the world have favored this program for years, and the most recent version of Photoshop contains many enhancements specifically for Web design. It allows you to create graphics that have a "Web safe" palette or optimize images using an adaptive palette to reduce the number of colors (and therefore the file size) of the image. Its layered approach to creating images is very flexible, so you can try out different effects. Unfortunately, there is no shareware versions of Photoshop. If you are interested in Photoshop, check out the latest product information from Adobe at <http://www.adobe.com/prodindex/photoshop/main.html>.

Search and replace tools

Every Web author runs into the problem of having to change a single item—a toolbar or graphic—on every page of a Web site. Plodding through every page with a Web editor to make the change is very time consuming. Luckily, there is a category of tools that make this task less painful. Many integrated Web site management programs now offer search-and-replace utilities, but in practice some can be unwieldy. Here is one alternative:

Search and Replace by Funduc Software

If you want to search and replace in one step, check out Search and Replace by Funduc

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5986 East Boulevard, Vancouver, B.C.

Visioneer offers low-cost doc management

By Emru Townsend

When I first got a scanner, people asked me what I did with it. "Well," I'd begin confidently, "I can scan photographs for publishing and Web use, and I can use it for document management."

PaperPort ScannerSuite

From: Visioneer

Tel: 510-608-0300 or 800-787-7007.

<http://www.visioneer.com>

Email: info@visioneer.com

System requirements: IBM or compatible PC, Windows 95/NT 4.0.

Estimated street price: \$119

"Document management? How do you do that?" they would ask.

"Well, I can fax scanned documents with my fax modem, and... er... ah..." At this point, I'd start fidgeting. "Say, isn't that Leonardo DiCaprio by the dessert tray?" Then I'd sprint for the exit.

The truth of the matter is, keeping track of text and graphics documents armed with only Windows 95's Explorer and a handful of utilities is hard work, which is why Visioneer's PaperPort ScannerSuite is so enticing. Like a car salesman in a cheap suit, its colorful box promises to turn your computer into a document-management powerhouse, boasting seven software titles (PaperPort Deluxe, ProOCR100, Web Publisher, AOL Publisher, FormTyper, PhotoEnhancer, and Quicken ExpensAble) for one low price. Astonishingly, the ScannerSuite does the job and does it well, with but a few caveats.

Most people associate PaperPort with the slender sheet scanner that put Visioneer on the map. The ScannerSuite is software only. It will work with PaperPort hardware, of course, but also with any TWAIN-compliant scanner, according to Visioneer.

The backbone of the suite is PaperPort Deluxe, currently at version 5.3. When you start PaperPort, you're presented with a grey desktop with a split-screen view and two toolbars. On the left is an Explorer-like window with various folders with names like Articles and Saved Faxes. On the right is the PaperPort desktop, with thumbnails of the scanned documents in the current folder. As you might expect, these documents can be moved, copied, deleted, or converted to various formats.

But that's just document organization, not management. Where PaperPort shines is in its features for indexing, sorting, and manipulating documents. Multiple-page documents with individually scanned pages can be compiled by "stacking" them; each document can be marked up and annotated without permanently affecting the original image; keywords and comments can be added to each document. My favorite feature for text documents by far is SimpleSearch, which does a quick OCR (optical character recognition) operation and stores the text in a database that can be searched later.

A toolbar on the bottom provides drag-and-drop access to your applications. A nice touch is that the PaperPort can supply the application with a copy of the original image; if you're so inclined, you can alter an image in Photoshop without ruining the original.

Among the applications are, of course, the

programs included in ScannerSuite. The three that I think are key for document management are FormTyper, PictureEnhancer, and ProOCR100. FormTyper allows you to directly enter text on a scanned form, which I found useful for the various faxed forms that need to

be filled out and faxed back. PictureEnhancer does just what it claims; it provides an intuitive means of adjusting brightness, contrast, sharpness, and more. While some of the options are quite useful (such as adding the effect of an indoor flash to an image), the

menu can be a chore; for instance, you cannot select a degree of lightening for an image, it must be adjusted by increments—each of which requires three commands.

Continued on page 105

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Internet Services You Can Depend On

Domain name disputes

Continued from page 84

Canadian-based business that registered more than 12,000 Internet domain names with the stated intent of licensing the domain names as email addresses. The domain names were common proper last names, such as Avery and Dennison, and used the ".net" top-level domain rather than the more popular ".com" domain. Avery Dennison sued, challenging the defendants' registration of the Avery.net and Dennison.net domains, alleging trademark infringement and dilution. The court granted judgment for Avery Dennison on the basis that the defendants' registration of the domain names prevented Avery Dennison from using its famous trademark as an Internet domain name and thereby wrongfully

diluted the mark's ability to identify Avery Dennison's goods and services in violation of the U.S. *Federal Trademark Dilution Act*. The court held that "the Internet registration system simply does not authorize cybersquatting," which the court reasoned would prevent Internet domain names from being used for their highest and best use. The court ordered the defendants to transfer the domain names to the plaintiff.

The April 22, 1998, U.S. District Court for the Southern District of California decision in *Playboy Enterprises Inc. v. Terri Welles*, involved a claim that former Playboy Playmate Welles had unlawfully used a number of Playboy's well-known trademarks as headings, watermarks, and meta-tags in her adult-oriented Web pages. Playboy argued this constituted

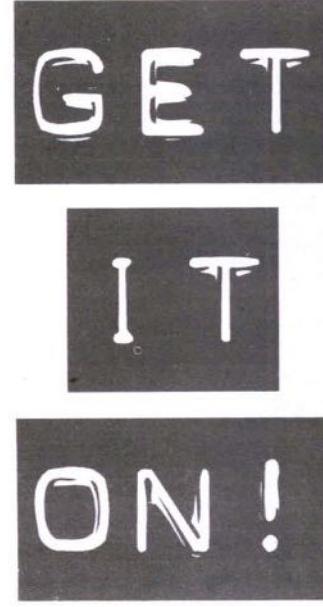
unfair competition and trademark infringement and dilution. The court dismissed Playboy's preliminary injunction application. The court held that Welles used the Playboy trademarks in good faith to describe and identify herself and the contents of her Web site, and there was no likelihood of confusion or risk of trademark dilution. The court reasoned that Playboy had not established a strong likelihood of success on the merits and the injunction should not be granted.

Protecting valuable domain names

The following are some basic rules that ought to be followed to protect valuable domain names and guard against the unauthorized use of trademarks and names as domain names:

- make registration and renewal payments in a timely manner;
- register domain names as trademarks;
- properly use domain names as trademarks in association with wares or services;
- search the Internet on a regular basis to ensure trademarks are not being infringed;
- take timely steps to stop all infringing conduct through negotiation, administrative dispute resolution, or litigation. □

Bradley J. Freedman is a trial lawyer with the Vancouver law firm Ladner Downs. His preferred areas of practice include intellectual property law and commercial litigation. He can be reached by email at bfreedman@ladner-downs.com. This article is of a general nature, and cannot be regarded as legal advice. (c) B.J. Freedman 1997



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Email: accounts@infomatch.com

Weaving your own web site

Continued from page 88

Software. This simple yet powerful utility will globally change code on your Web site. It can add lines of HTML code quickly to all of your Web pages. It's a shareware utility and can be downloaded from Funduc at <http://www.home.sprynet.com/sprynet/funduc>.

HTML validators

There are several utilities to comb your Web site for broken links and missing images. In the early days of Web design you could expect to download a tool to perform this task, but it is now more common to use one of several Web sites that will do these tasks and often much more. Using these tools is a very good idea: it's much better for authors to find and repair their own errors before somebody else does!

Doctor HTML by Imagiware Inc.

Doctor HTML is a very useful Web-based utility that retrieves your Web pages to check for spelling mistakes, missing images and broken hyperlinks. Detailed information on Doctor HTML is available at the Imagiware Web site at <http://www.2.imagiware.com/RxHTML>.

WebLint

WebLint is a Perl script that checks your Web pages for syntax errors and style. Information about WebLint can be found at <http://www.cre.canon.co.uk/~neilb/weblint.html>.

Web Site Garage

This online validator can't get any simpler—

just type in the URL for a Web page ([at <http://www.websitetgarage.com/>](http://www.websitetgarage.com/)), and it will check the site out for such things as browser compatibility, relative loading time of the images, and whether you have any dead links. Some measures, like examination of a site's HTML design, are highly relative—under its criteria both the Microsoft and Netscape home pages only get "fair" ratings. That aside, the site also has many other features designed to help you reduce the size of your image files, register your site with search engines and more.

W3C HTML Validation Service

Created by the World Wide Web Consortium (W3C), the people who set the standards for the Web, this HTML Validator can check your code against the new tags in the official HTML 4.0 specification. This means you can check your code for future as well as present use. If you plan on using the HTML 4.0 checker, make sure you add the !DOCTYPE tag at the beginning of your Web page as described on the validator's Web page. It can be found at <http://www.validator.w3.org/>. □

**Next Issue:
Web site management programs**

Keith Schengili-Roberts welcomes any comments, suggestions or HTML tips and tricks you may have. You can email Keith at: robertsk@wave.home.com. Look for his new book on HTML, *The Advanced HTML Companion 2nd Edition*, co-authored with Kim Silk-Copeland (ISBN: 0-12-623542-2), to appear in bookstores soon. Previous articles in the series can be found at *The Computer Paper* Web site at: <http://www.tcp.ca/>.

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MobilePro-750C NEC's silver bullet

"Size matters"

—Godzilla advertising campaign

By Jim Omura

Buying mobile information technology is mainly a question of balancing size, power and price. Subnotebook products are intended for a lighter workload than would make a full-size laptop necessary, but which might require something better than a pocketable device. This is a "burst workload." It is not a constantly heavy workload, but when you are working, you're working fairly intensely. The MobilePro-750C (MP-750C) is the latest thinking in this category.

NEC MobilePro-750C

From: Packard Bell NEC Inc.
1025 Tristar Dr., Mississauga, ON L5T 1V5
Tel: 888-863-2669 http://www.nec-computers.com/



Size: 24.4x13.7x3.8 cm (9.5x5.3x1.5 in.)
Weight: 853 g (1.87 lb.) with batteries
Display: 640x240x256 passive color LCD w/backlight and touch screen
Screen area: 19.2x7.2 cm (7.5x2.8 in.)
CPU: 80 MHz NEC Vr4111
RAM: 16 MB (expandable to 32 MB)
ROM: 16 MB
OS: Windows CE 2.0 (Build 7258-7260)
Price: \$1,299
Pros: Practical size keyboard; software covers basic mobile usage; fast
Cons: Not "Wintel" software; may need new ROM for browser upgrades; not pocketable

How small is small?

Model	MobilePro	Libretto	Portege
750C	70CT	320CT	
Width (cm)	24.4	21.0	26.3
Length	13.7	11.5	19.2
Thickness	3.8	3.4	3.5
Weight w/batt.	852.8 g	850 g	1,700 g
Price*	\$1,299	\$3,179	\$5,439

(*As of June 15, 1998)

The MP-750C keyboard is comfortable for most hands. It is not completely silent, but might be acceptable in some lecture halls. Otherwise, the "Calligrapher for NEC" print recognition system might be useful for short note taking, though the full cursive upgrade version would be better.

Compared to recordings made on an old

Psion Series 3a handheld, the sound sampling in the MP-750C is crisper overall thanks to the higher sample rates, but the background noise, though different in type, is roughly the same level. There is no voice-recognition software included.

The monitor output display is only VGA, and supports just 16 colors. It shows a completely different image than the built-in LCD display, but it can only be used with the PowerPoint program.

HTML (Web)

Because Pocket Internet Explorer 2.0 does not dither graphics, different images show up better on some screen hardware than on others. On the MP-750C, a 64-shade monochrome JPEG shows up better than a 32-shade GIF version of the same image. However, when looking at color images, the highest quality smoothly colored JPEG files sometimes don't look as good as relatively crude GIF files. XBM format and GIF with transparency are supported, but not PNG.

The nicest improvement over previously tested WinCE devices is sheer speed. The NEC Vr4111 CPU is based on the Vr4110 core, which uses 0.25micron technology, allowing 2.5V internal operation at speeds up to 100 MHz. At this speed, with its 16KB instruction/8KB data on-chip caches, it is capable of 130 Dhrystone MIPS, yet would consume only about 180mW. It is capable of addressing 64MB of EDO RAM and 64 MB of Flash memory ROM.

NEC's CPU developments

	MobilePro 400	MobilePro 700	MobilePro 750C
CPU:	Vr-4101	Vr-4102	Vr-4111
Speed:	33 MHz	54 MHz	80 MHz
Instr. cache:	2KB	2KB	16KB
Data cache:	1KB	1KB	8KB
Consumption:	200mW	250mW	180mW
	@ 33 MHz	@ 66 MHz	@ 100 MHz
MIPS:	45	80	130
	@ 40 MHz	@ 66 MHz	@ 100 MHz

MIPS est. are Dhrystone @ max. design speed, provided by NEC.

Speed Tests

First, screen redraws are generally now too fast for hand timing. Drawing the desktop with file icons can still be slow enough to be timed, no meaningful comparison standard has been developed. The spreadsheet tests running at about 0.2 sec. vertical and 0.6 sec. horizontal are also on the verge of losing meaning.

The HTML "tables and GIFs" test used in the "You Can Take It With You" HTML article in the July 1998 TCP gave an average time 6.8 sec. with no apparent color dithering. There was a 1.5 sec. difference between the slowest and fastest runs, probably due to file cache handling. This compares well against the HP-360LX at 19.1 sec. and the Sharp HC-4000 at 16.8 sec. and my older MobilePro-400 at 39.5 sec.

Continued on page 96

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AD Digital Media	987 Crystal Court	Coquitlam	604-942-4163	addm.com/	sales@addm.com	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	A: No startfee, \$21.99/mo/basic Web hosting (10 MB) B: No startfee, \$26.99/mo/advanced Web hosting (40 MB)	PMI
AE Electronics	138-2981 Simpson Rd	Richmond	604-279-8867	www.aebc.com	info@aebc.com	6:1	56K	x2/Rock	Yes	Yes	No	NA	NA	Immed.		A: No startfee, incl kit, \$18.88/mo/unlim hr, no Web storage B: No startfee, \$395/mo/unlim hr 128k dedicated ISDN access, no Web storage	PMI
Alter.net Internet	303-21183 88th Ave.	Langley	604-882-8480	www.bc-alter.net	info@bc-alter.net	14:1	33	NA	No	No	No	4	<5 min			A: No startfee, incl kit, \$8/mo/6 hr email only, \$1.50/hr over, no Web storage B: No startfee, incl kit, \$15/mo/30 hr, \$1.50/hr over, no Web storage	PDMI
Axion Internet	201-1190 Hornby St	Vancouver	604-687-8030	www.axion.net	info@axion.net	12:1	56	Rock	Yes	Yes	Yes	13	NA			A: No startfee, incl kit, \$19.95/mo/100 hr, \$1/hr over, no Web storage B: \$35 startfee, incl kit, \$25/mo/30 hr dialup ISDN access, \$1.75/hr over, no Web storage	PDMI
BC Business Conn.	PO Box 2412	Sidney	250-652-4815	commercial.net/vault	bcbc@commercial.net	10:1	56	Rock	NA	NA	No	2	NA			A: No startfee, \$19.95/mo/10 hr, \$1.65/hr over, incl Web storage	PDMI
BCSuperNet	2196 Alberni Highway	Coombs	250-248-4129	www.bcsupernet.com	bstevens@bcsupernet.com	10:1	33	NA	No	No	3	Immed.			A: \$25 startfee (free w. 3 mo. prepaid), incl kit, \$20/mo/50 hr, \$1.50/hr over, incl Web storage	PMI	
Blaze Telecomm.	200-118 11th St.	New West	604-525-7300	www.blaze.ca	info@blaze.ca	10:1	56	Rock	Yes	Yes	NA	NA	NA		A: \$15/mo/40 hr prime, unlimited non-prime, \$1/hr over, incl Web storage (non-commercial)	PDMI	
Blue Crow Internet	1560-555 W Hastings	Vancouver	604-608-1117	www.bluecrow.com	info@bluecrow.com	9:1	56	NA	No	No	No	5	10 min			A: No startfee, incl kit, \$19.95/mo/33.6K unlim hr, incl Web storage B: No startfee, incl kit, \$29.95/mo/56K unlim hr, incl Web storage	PDMI
Canada Internet Dir.	555 West Hastings	Vancouver	604-602-1800	www.direct.ca	cservice@direct.ca	10:1	56	x2/Rock	Yes	Yes	Yes	NA	2 min			A: \$25 startfee, incl kit, \$9.95/mo/5 hr, \$1.95/hr over, incl Web storage B: \$25 startfee, incl kit, \$19.95/mo/30 prime hr and unlim non-prime, incl Web storage	PMI
CanadaWired	410-938 Howe St.	Vancouver	604-606-4616	www.canadawired.com	help@canadawired.com	4:1	56	X2	Yes	Yes	NA	6	Immed.			A: No startfee, incl kit, \$18.95/mo/unlim hr, incl Web storage B: No startfee, incl kit, \$35.95/mo/unlim corporate use, incl Web storage	PMI
Coastnet	4252 Commerce Circ.	Victoria	250-953-2680	www.coastnet.com	sales@coastnet.com	NA	56	Rock	No	Yes	No	12	NA			A: No startfee, \$24.95/mo/100 hr, incl Web storage B: \$8.95/mo/8 hr, incl Web storage	PMI
ComServe	8080-158A St.	Surrey	604-543-8577	www.comserve.com	ader@comserve.com	12:1	56	X2	NA	Yes	No	2	NA			A: No startfee, no kit, \$19.95/mo/unlim hr, incl Web storage B: No startfee, no kit, \$18.95 (prepaid quarterly)/mo/unlim hr, incl Web storage	PDMI
CONNET Intelligence	2132-12811 Rowan Pl.	Richmond	604-279-0381	www.conneti.com	contact@conneti.com	10:1	33	NA	No	No	NA	3	Immed.			Contact CONNET Intelligence Technology Inc. for details of services and fees	PMI
Cybersurf Inc.	301-510 W. Hastings	Vancouver	604-669-7873	www.cybersurf.net	info@cybersurf.net	10:1	56	Rock	Yes	Yes	NA	NA			Contact Cybersurf Inc. for details of services and fees	PDMI	
Digital Ark	306-576 England Ave.	Courtenay	800-275-4260	www.ark.com	info@ark.com	20:1	33	NA	No	No	No	8	1 hr			A: \$39.95 startfee, incl kit, \$19.95/mo/50 hr, \$1.50/hr over, incl Web storage B: \$39.95 startfee, incl kit, \$27.75/mo/75 hr, \$1.50/hr over, incl Web storage	I
Digital Rain Internet	310-7231-120th St.	Delta	604-543-3025	www.digital-rain.com	account@digital-rain.com	7:1	33	NA	Yes	NA	No	8	NA			A: Incl kit, \$5/mo/9 hr email only, \$7.75/hr over, incl Web storage B: \$20 startup fee, incl kit, \$9.95/mo/50 hr, \$7.75/hr over, incl Web storage	PDMI
Dowco.com	200-1024 Ridgeway	Coquitlam	604-664-1044	www.dowco.com	webmaster@dowco.com	15:1	128K	X2	Yes	Yes	No	10	<4 hours			A: \$19.95 startfee, incl kit, \$9.95/mo/10 hr, \$9.95/hr over, no Web storage B: \$19.95 startfee, incl kit, \$49.95/mo/100 hr 128K access, \$9.95/hr over, no Web storage	P
In2net Network Inc.	501-938 Howe St.	Vancouver	604-601-2118	www.in2net.com	info@in2net.com	8:1	56	Rock	Yes	Yes	No	4	Immed.			A: No startfee, incl kit, \$20/mo/150 hr, \$1/hr over, incl Web storage B: No startfee, incl kit, \$15/mo/30 hr, \$1/hr over, incl Web storage	PDM
Infomatch	143-9632 Cameron St.	Burnaby	604-421-3230	www.infomatch.com	accounts@infomatch.com	14:1	33	NA	Yes	NA	No	3	NA			A: No startfee, \$13.91/mo/60 hr, \$1.20/hr over, incl Web storage B: No startfee, \$19.95/mo/120 hr, \$1.20/hr over, incl Web storage	DM
Infoserve Tech.	5438 Imperial St.	Burnaby	604-482-8238	www.infoserve.net	info@infoserve.net	10:1	56	Rock	No	No	No	2	NA			A: \$15 startfee, incl kit, \$16.50/mo/120 hr, \$1/hr over, no Web storage B: \$15 startfee, incl kit, \$9.96/mo/12 hr, \$1/hr over, no Web storage	PDM
InsideNET	4-373 Baker St.	Nelson	250-354-0288	www.insidenet.com	sales@insidenet.com	8:1	33	NA	NA	No	No	3	Immed.			Contact InsideNET for details of services and fees	PMI
Internet Freedom	5751 Winch	Burnaby	NA	www.if.com	NA	3:1	56	Rock	NA	NA	NA	NA	NA			A: \$14 startfee, incl kit, \$14/mo/70 hr, \$1/hr over, incl Web storage	PMI
Internet Gateway	800-889 W. Pender	Vancouver	604-654-6088	www.intergate.bc.ca	staff@intergate.bc.ca	10:1	56	x2/Rock	Yes	No	Yes	15	1 min			A: No startfee, incl kit, \$19.50/mo/100 hr, no Web storage B: No startfee, incl kit, \$29.95/mo/100 hr, incl Web storage	PDMI
Internet Junction	1-4216 25th Ave	Vernon	888-944-INET	www.junction.net	info@junction.net	15:1	56	NA	Yes	Yes	No	5	NA			A: \$50 startfee, \$9.95/mo/10 hr, \$2/hr over, incl Web storage B: \$50 startfee, \$19.95/mo/30 hr, \$1/hr over, incl Web storage	PDMI
Internet Lightspeed	210-6833 Sellers Ave.	Burnaby	604-482-1190	www.lightspeed.bc.ca	info@lightspeed.bc.ca	10:1	56	x2/Rock	Yes	Yes	No	4	Immed.			A: No startfee, incl kit, \$9.95/mo/20 hr, \$1.50/hr over B: Incl kit, \$14.95/mo/40 hr, \$1.50/hr over	PDMI
Internet Portal Serv	302-135 Abbott St.	Vancouver	257-9400	www.portal.ca	sales@portal.ca	NA	56	Rock	Yes	Yes	NA	NA	<1 hr		Contact Internet Portal services for details of services and fees	PMI	
Intouch InterNet	3448 Cambie St.	Vancouver	604-875-6306	www.intouch.bc.ca	info@intouch.bc.ca	12:1	33	NA	No	No	No	3	Immed.			A: No startfee, no kit, \$9.95/mo/weekends (6pm Fri-6 pm Mon), incl Web storage	PDMI
Island Internet Inc.	57 Skinner St.	Nanaimo	250-753-1139	www.island.net/	sales@island.net	15:1	56	Rock	Yes	Yes	Yes	5	30 min			A: \$25 startfee, incl kit, \$9.95/mo/10 hr, \$2/hr over, incl Web storage B: \$25 startfee, incl kit, \$15.95/mo/30 hr, \$1.75/hr over, inc Web storage	PMI
Lynx Internet	508-938 Howe St.	Vancouver	604-331-2511	www.lynx.bc.ca	info@lynx.bc.ca	8:1	56	x2/Rock	Yes	No	Yes	5	5 min.			A: \$25 startfee, incl kit, \$20/mo/150 hr, \$1/hr over B: \$50 startfee, incl kit, \$50/mo/200 hr, \$1/hr over, incl Web storage	PDM
MacSolutions	NA	New West	604-893-0663	www.msn.bc.ca	sales@msn.bc.ca	NA	33	28	NA	No	No	NA	1 hour			Contact MacSolutions Network for details of services and plans	PMI
Maximum Internet	101-5007 47A Ave.	Delta	604-940-8921	www.max-net.com	admin@max-net.com	6-8:1	28	NA	No	No	No	6	5 min			A: \$25 startfee, incl kit, \$29.95/mo/no hourly charge B: \$25 startfee, incl kit, \$19.95/mo/30 hr	PM
MaxNet	510-1190 Melville St.	Vancouver	604-687-5200	www.maxnet.ca	sales@maxnet.ca	NA	NA	NA	Yes	NA	No	NA	NA			Contact MaxNet for details of services and fees	PDMI
MDI Internet Ltd.	700-1080 Howe St.	Vancouver	604-602-9168	wwwmdi.ca	info@mdi.ca	8:1	56	Rock	Yes	Yes	No	4	Same day			A: \$10 startfee, incl kit, \$19.88/mo/150 hr, \$1/hr over, incl Web storage B: \$8.88 startfee, no kit, \$18.88/mo/450 hr, \$1/hr over, incl Web storage	PDMI
Mortimer Online	120-2465 Beta Avenue	Burnaby	604-294-2995	www.mortimer.com	sales@mortimer.com	12:1	28	NA	No	No	No	3	<10 min			A: No startfee, \$14.91 (1 yr prepaid)/mo/548 hrly, incl Web storage B: No startfee, \$16.50 (6 mo prepaid)/mo/274 hrly, incl Web storage	PDMI
Nechako Access	Box 1348	Vanderhoof	250-567-5568	www.nano.bc.ca	webmaster@vfh.nano.bc.ca	15:1	28	NA	No	No	No	6	<24 hr			Contact Nechako Access Network Association for details of services and fees	PM
Netcore Pro. Serv.	103-8080 Anderson Rd	Richmond	604-272-2624	www.npsnet.com	info@npsnet.com	10:1	33	NA	No	No	No	5	NA			A: \$39.95 startfee, incl kit, \$34.95/50-hour block, incl Web storage B: \$39.95 startfee, incl kit, \$9.95/mo/10 hr, \$1/hr over, incl Web storage	PDMI
NetNation	1175-555 W. Hastings	Vancouver	604-688-8946	www.netnation.com	sales@netnation.com	NA	NA	NA	NA	NA	NA	6	12 hr			Contact NetNation for details of services and fees	M
ParaLynx Internet	210-435 Columbia St.	New West	604-515-3190	www.paralynx.com/	info@paralynx.com	NA	56	Rock	Yes	Yes	Yes	1	1 hr			A: No startfee, kit available, \$13.95/mo/18 hr, \$1.50/hr over, incl Web storage B: No startfee, kit available, \$19.95/mo/54 hr, \$1.50/hr over, incl Web storage	PM
Planeteer	210-11180 Voyageur Way	Burnaby	604-606-7620	www.planeteer.com	info@planeteer.com	8:1	28	NA	Yes	No	No	3	15 min.			A: \$24.95 startfee, incl kit, \$9.95/mo/25 hr, \$7.75/hr over, incl Web storage B: \$24.95 startfee, incl kit, \$19.95/mo/75 hr, \$7.75/hr over, incl Web storage	PDMI
Prism Internet	120-8740 Beckwith Rd.	Richmond	604-270-7135	www.prismnet.bc.ca	info@prismnet.bc.ca	8:1	56	Rock	Yes	Yes	No	5	Immed.			A: \$25 startfee, incl kit, \$18.95/mo/100 hr, \$9.95/hr over, incl Web storage B: Incl kit, \$24.95/mo/150 hr, \$.95/hr over, incl Web storage	PDMI
Quik Internet	1100-1200 W 73rd Ave	Vancouver	604-267-7070	www.vancouver.quik.com	vancouvr@vancouver.quik.com	5:1	56	Rock	No	No	No	8	Immed.			A: \$19.95/mo/100 hr, incl 2 MB Web storage B: \$29.95/mo/unlimited hr corporate use, incl 10 MB Web storage	PM
Radiant Comm	1660 W. Georgia St.	Vancouver	604-257-0500	www.radiant.net	info@radiant.net	8:1	56	Rock	Yes	Yes	Yes	7	5 min			A: \$25 startfee, incl kit, \$19.95/mo/150 hr, \$1/hr over, incl Web storage B: No startfee, no kit, \$29.50/mo/100 hr dialup ISDN access, \$1/hr over	PDMI
RandomLink	1376 Seymour	Vancouver	604-602-1191	www.randomlink.com	info@randomlink.com	5:1	56	x2/Rock	Yes	No	No	2	Immed.			Contact RandomLink InterActive Inc. for details of services and fees	PMI
Rapidnet Tech	3-31018 Pardonville Rd.	Abbotsford	604-855-7638	www.rapidnet.net	info@rapidnet.net	NA	NA	NA	No	No	NA	NA	NA			A: \$25 startfee, incl kit, \$9.95/mo/10 hr, \$1/hr over, no Web storage B: \$25 startfee, incl kit, \$14.95/mo/3	

Internet Service Providers for B.C.

Provider name	Address	City	Sales phone	Web site	Email	User to line ratio	Top speed	Modem type	Ded. ISDN up	Dial up ISDN	DSL	Tech staff	Ave. time	Plans
SOHO Skyway	1000-701 W. Georgia	Vancouver	604-482-1222	sohoskyway.net	sales@sohoskyway.net	2:1	56	Rock	Yes	Yes	No	NA	Immed	A: \$25 startfee, \$30/mo/30 prime hr ISDN access (1 workstation), \$2.75/prime hr over B: \$150 startfee, \$80/mo/20 hr ISDN access (multiple workstation), \$2.75/hr over
Sympatico (BC)	NA	NA	800-773-2121	www.bc.sympatico.ca	service@bc.sympatico.ca	NA	28	NA	No	No	No	NA	NA	A: \$29.95 start fee (incl kit, 1st mo, 100 hr), \$9.95/mo/5 hr, \$1.50/hr over B: \$29.95 start fee (incl kit, 1st mo, 100 hr), \$24.95/mo/60 hr, \$1.50/hr over
the InterNet store	3448 Cambie St.	Vancouver	604-875-6306	www.intouch.bc.ca	gninow@intouch.bc.ca	12:1	56	X2	NA	Yes	No	4	Immed	A: No startfee, incl kit, \$15.95/mo/100 hr/3 mo (bankable) 33.6K access, incl 5 MB Web stor. B: No startfee, incl kit, \$19.95/mo/200 hr/3 mo (bankable) 33.6K access, incl 5 MB Web stor.
The Net Idea	640 Front St.	Nelson	250-352-3512	www.netidea.com	sales@netidea.com	11:1	56	Rock	NA	NA	NA	8	2 hr	A: \$25 startfee, incl kit, \$19.95/mo/30 hr, \$1/hr over, incl Web storage B: \$25 startfee, incl kit, \$24.95/mo/60 hr, \$1/hr over, incl Web storage
Utranet Canada	250-780 Beatty St.	Vancouver	888-264-2222	www.ultranet.ca	info@ultranet.ca	12:1	56	Rock	No	No	Yes	3	15 min	A: \$10 startfee, incl kit, \$4.95/mo/email only B: \$25 startfee, incl kit, \$19.95/mo/80 hr, \$1/hr over, incl Web storage
Uniserve Online	27009 Fraser Hwy	Aldergrove	604-856-6281	www.uniserve.com	info@uniserve.com	15:1	56	Rock	Yes	Yes	No	12	<10 min	A: \$25 startfee, incl kit, \$8.95/mo/10 hr, \$1/hr over, incl Web storage B: \$25 startfee, \$4.95/mo/120 hr, \$.50/hr over, incl Web storage
Wizard Tower TechnoServices	14503-104th Avenue	Surrey	604-589-0037	tower.ca.gateone.com	sales@tower.ca	4:1	33	NA	Yes	Yes	No	NA	Immed	A: No startfee, kit avail, \$15/mo/30 hr, \$1/hr over, incl personal Web storage B: \$50 startfee, incl kit, \$95/mo/8am-5pm dedicated corporate use (incl 5 emails), \$1/hr over

ICSA forms Malicious Code Consortium

By Craig Menefee

CARLISLE, PA. (NB)—The International Computer Security Association (ICSA) has formed a Malicious Mobile Code Consortium (MMC), not to create malicious miniprograms, but to counter them.

Malicious mobile code is any auto-executable mini-program that comes in from the Internet and commits mischief against a host system.

The definition covers any program that can take independent action to cause damage on the local system. Examples are ActiveX controls, Java applets, scripts, HTML (Hypertext Markup Language) plug-ins and

browser "helper programs." Any of them can be misused to damage data in storage or memory, initiate denial-of-service attacks against World Wide Web sites or Internet service providers (ISPs) or redirect standard services on a user's computer.

During a recent teleconference, manager of the consortium, said MMC has already met to set the consortium's direction and define projects over the next three months.

One primary goal of MMC is to educate users about the threats and the tools now available to combat them. Over the next three months, said Harper, MMC will develop a Web page at the ICSA primary site as an information resource.

Next, MMC will produce a white paper describing the nature and extent of the mobile malicious code threat. Also, the group will fund a survey designed to quantify information like current levels of threat and countermeasures used in existing organizations.

Finally, said Harper, the group will propose criteria for product testing and certification to provide baseline standards for the industry and give users a way to pick and choose among competing protection systems.

Harper emphasized the consortium does not seek to eliminate auto-executable code from Internet use. "They have played a very key role in making the Internet into a useful, dynamic environment," he commented. "We

encourage the use of this technology in an intelligent and safe manner."

MMC has 13 founding members, said Harper, all of which offer products designed to protect users from hostile Internet programs. They include Advanced Computer Research, Ltd., Computer Associates, Cybermedia, Digitivity, Dr. Solomon's Software, eSafe Technologies, Finjan Corp., Internet Security Systems, Quarterdeck Corp., Security-7, Symantec Corp. and Trend Micro, with more firms expected to join.

ICSA is a commercial company that certifies different types of computer security software and hardware. □

Contact: ICSA, <http://www.icsa.net>

High-tech workers likely to switch careers

FAIRFAX, Virginia (NB)—Call it early middle age crisis or just plain burn-out, but almost half of all college-educated workers in their early 30s would choose a different major if they could do it all over again, according to a recent survey by George Mason University.

But while most of the non-science majors say they would focus on science or technology the second time around, the grass appears greener on the liberal arts side of the fence for information technology workers as well.

"It seems that non-technical people want to know more about technology, while technology people are finding there's more to life than bits and bytes," George Mason University president Alan G. Merten said. "The results are a healthy sign that people are looking to balance their lives and fill in the gaps."

George Mason University conducted the study with the Potomac Knowledge Way, a Northern Virginia organization focusing on the information technology industry.

While 57 percent of the 400 graduates interviewed by Market Research Institute for the study have taken additional college-level courses since graduation, mostly to advance their careers, information technology workers were more like than other workers, by a 31 percent to 22 percent margin, to take courses purely for personal rather than professional reasons.

The survey also found that information technology workers are almost twice as likely to switch careers as the average employee, with one in three saying he or she expects to make a career change in the future. Overall,

the study found that the majority of college graduates have switched careers at least once and about one on five expects to switch in the future.

About 43 percent of the respondents said that if they had to do it all over again, they would have majored in something else, with the most popular choice, surprisingly, being the liberal arts, with 64 percent. Some 17 percent said they would switch to science, technology or computer science, while 17 percent also said they would switch to a business-related major.

But the same degree of restlessness also shows up in the high-tech careers, with 39 percent saying they would choose a different major if they could. More than 56 percent said they would opt for the "other" category, usually meaning liberal arts, while 26 percent said they would switch to education. Only seven percent said they would switch to business or computer science.

The results suggest that employees are more restless than in the past, Merten said, "and that companies, especially in the critically short-staffed high-tech industries may want to take a hard look at their retention efforts."

No matter what the career choice has been, however, the vast majority are confident they can handle the onrush of technology. Only seven percent feared the pace of change would pass them by, while 60 percent described themselves as "comfortable" with the technology both on the job and in their homes. Another third said they are getting by for now with the technology, but are a little

concerned with what may be coming down the road.

The study also found that 89 percent of the respondents said they would be more likely to stay with an employer that paid for all or

part of an employee's continuing education.

"The results show that the era of lifelong learning is here," Merten said. "Employers that ignore their employees' desire for ongoing education do so at their own peril." □

IBM to replicate damaged Pieta

FLORENCE, Italy (NB)—IBM researchers with the visual and geometric computing group have announced a project to replicate Michelangelo's damaged second Pieta statue, the one he defaced for reasons that have never been explained. Using 3D modeling techniques, the team will work closely with Jack Wasserman, a prominent Renaissance art historian, to recreate the statue and perhaps even solve the mystery of why the great artist ruined his own work.

An IBM spokesperson told Newsbytes, "The research team has just started the extensive work of capturing the data, with over two billion bits of data collected using the Virtuoso camera. The Virtuoso, more commonly known for its use by plastic surgeons, has been upgraded with new software specifically designed for the project." The camera's six lenses capture the statue's surface detail in color, then sort the information digitally, she added.

Gabriel Taubin, head of the research group, said the project held not only artistic interest, but presented the technological challenge of collecting data, then assembling that data into a 3D model that could be used to "render very accurate images under different lighting conditions, from different points of view."

IBM will use the Virtuoso camera to take about 700 separate digital shape photos of the statue. The positions of the shape photos will be critical when assembled into a "single, accurate digital 3D representation" of what the computer has stored. An IBM source said the process of developing new hardware and software to manage the huge amounts of data was also a challenge. IBM's work on the Pieta will be reproduced in a book.



Contact: IBM Florentine Pieta project <http://www.ibm.com/News/pieta>

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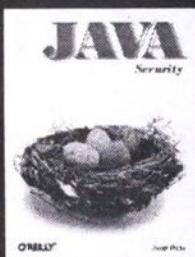
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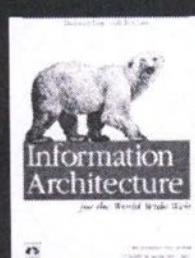
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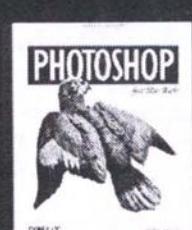
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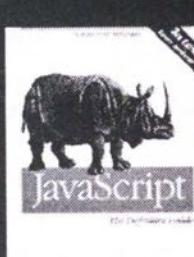
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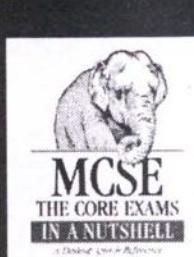
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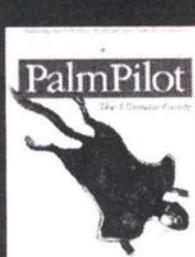
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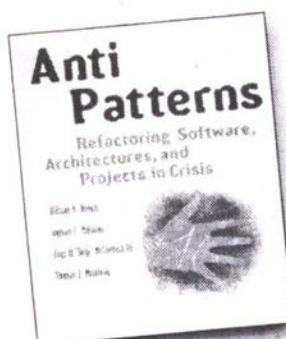
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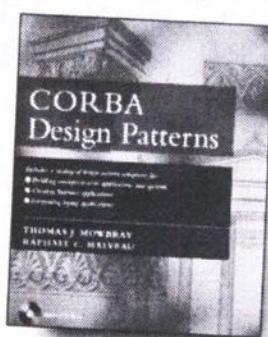
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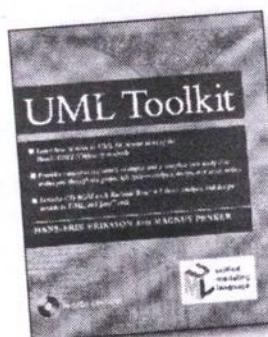
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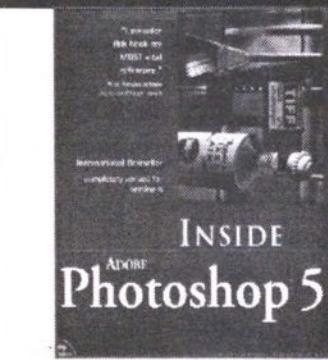


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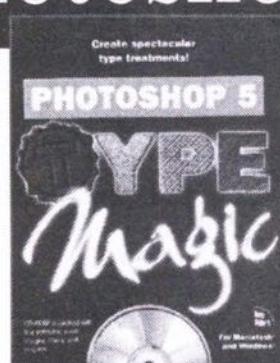
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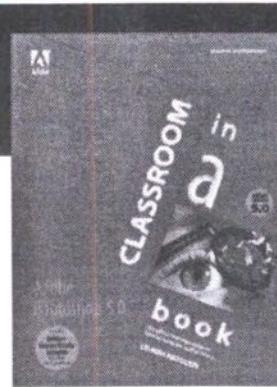
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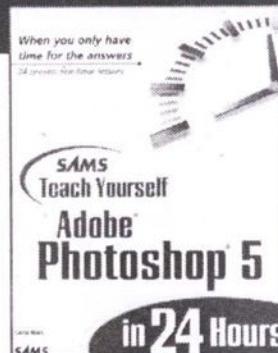
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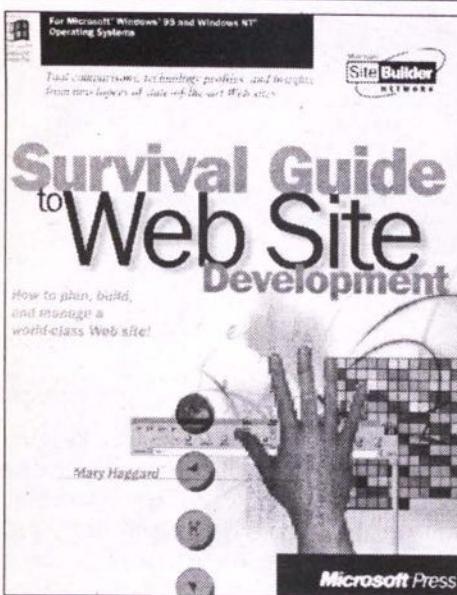
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A superficial look at Microsoft Web tools

By Keith Schengili-Roberts

This book from Microsoft Press concentrates on developing Web sites using Microsoft's many software tools designed for this purpose. Author Mary Haggard has had a lot of experience with such tools as a regular contributor to the popular Microsoft Site Builder Network Magazine on the Web. But while the magazine contains some genuinely useful, practical information for Web developers, this book lacks the depth found in the magazine.



Survival Guide to Web Site Development

Author: Mary Haggard
Publisher: Microsoft Press
(distributed by ITP Nelson, Tel: 800-268-2222).
ISBN: 1-57231-851-1
Softcover 180 pages 1998
Price: \$28.99

Rating:

Information content: **
Readability: *** 1/2
Intended for: Beginner
Overall Rating: *** 1/2

The book is wholeheartedly devoted to the concept of creating a Web site using Microsoft tools. This is certainly possible considering the number of such tools available, including FrontPage and Visual InterDev. This does not mean the book looks at Web site development with only Microsoft's Internet Explorer in mind. It does talk about working with Netscape as well (somewhat grudgingly), but it tends to concentrate more on features found only in Internet Explorer, such as Active Desktop and Channels.

On the whole, the book provides a good overview of the many tools available to the would-be Web master. Unfortunately, it shies away from going into any particular topic in depth, and the reader is constantly referred to Web pages for more information.

Wait a sec, I didn't buy a book just to look up URLs on a subject, I bought a book because I wanted an explanation in print. It is all very well to point out an URL that provides more information on a topic, but in this case the book uses the URL to simply sidestep explana-

tions. A good example of this is the book's coverage of a feature in Internet Explorer that lets you specify fonts that can be automatically downloaded. Instead of going into the subject in detail, the book simply refers you to a Web page at the Microsoft site.

The book contains some interesting inter-

views with Web developers who are using Microsoft tools, and a decent overview of such things as developing content and dealing with Web servers. But while there's plenty of ground covered, the lack of depth scuttles the book in terms of it being a true "survival guide."

It is a good introduction to such topics as

Active Server Pages (ASP) and JScript, and to the types of software tools available from Microsoft to help you build Web pages—but don't expect much more than that. On the whole, a disappointing read—it's a book that should have been much better. Microsoft Web tools deserves better than this simple knock-off. □

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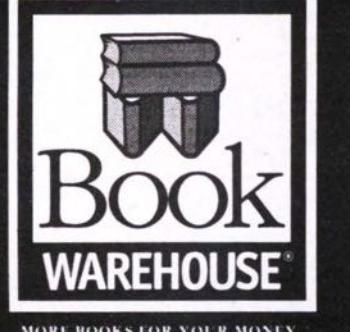
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Photoshop experts offer Web design tips

By Keith Schengili-Roberts

Most books on Photoshop devote one or two chapters to designing graphics for the Web, but the art and craft of using this image-creation software could fill its own book. To that end, O'Reilly comes to the rescue with *Photoshop for the Web*.

Photoshop for the Web

Author: Mikkel Aaland

Publisher: O'Reilly & Associates

Tel: 800-998-9938, <http://www.oreilly.com>

ISBN: 1-56592-350-2

Softcover 197 pages 1998

Price: \$42.95

Rating:

Information content: ****

Readability: ****

Intended for: Intermediate/Expert

Overall Rating: ****

The book is written by Mikkel Aaland, a photographer, writer and Web producer who knows more than a little about Web graphics. He interviewed many graphic artists behind

such well-known Web sites as HotWired, CNet, Discovery Channel and Second Story, and learned the many tips and tricks of their trade. This book is not merely a dry manual on how to use Photoshop, it's a detailed and well-written guide with advice from experienced users.

There are plenty of neat tricks in this book for getting the best results using Photoshop for the Web. It includes tips on adaptive palettes, creating usable non-Web palette colors, and optimizing images for clarity and file size. It also has tricks derived wholly from experience with digital media. For example, most pictures taken with a digital camera look better by enhancing the blue filter (most digital cameras are weak in capturing blue). The book also looks at how to use Photoshop to automate the production of images for the Web, using Photoshop as a Web layout tool and avoiding color shifts when importing vector images. In short, *Photoshop for the Web* has plenty to keep Photoshop users interested.

The steep price is largely due to the num-

ber of color illustrations (just under 90 examples) that accompany the text. Unfortunately for the author, technology never stands still, and neither does Photoshop developer, Adobe. Shortly after the release of this book covering features found in Photoshop 3.0 and 4.0, Adobe launched Photoshop 5.0, which comes with new, Web-specific features.

Despite this handicap, this book is well-written, easy to follow (even for a graphically challenged Photoshop novice like myself) and with plenty of hands-on examples, *Photoshop for the Web* is easily one of the best specialized computer books I've read this year. It is highly recommended for Photoshop users. □

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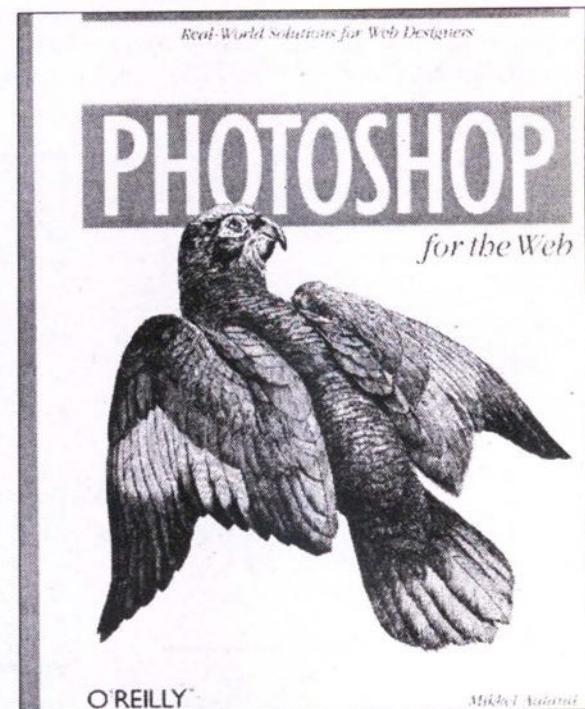
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O'REILLY

Mikkel Aaland

Mobile-Pro
Continued from page 91

Comparisons

Functionally, the Toshiba Libretto 70CT has a faster CPU, a real hard drive (currently a 1.51 GB), active matrix screen with twice as many pixels and, "real Wintel Windows" capable of directly running all programs that a desktop computer can run. On the other hand, the NEC MP-750C covers all the main functional bases, requires little boot time ("instant on"), and with its "no spindles" design it should be less susceptible to impact damage.

While the MP-750C is striking visually with its bold silver finish, at bottom the most striking feature is really the value. At less than half the price of a Toshiba Libretto 70CT (although only a few hundred dollars cheaper than the Libretto CT50, which is similar to the 70CT but with a 75 MHz Pentium processor and 800 MB hard drive), the question in the mind of a potential user is whether there is sufficient benefit in having full desktop Windows in a unit intended for less frequent "burst workloads" to justify paying more. Many people are going to find the NEC MP-750C covers their needs, and will pocket the change. The MP-750C is a strong competitor in this class. □

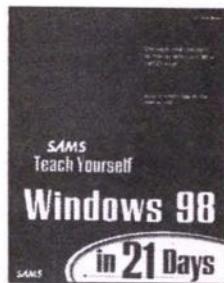
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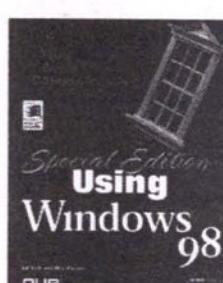
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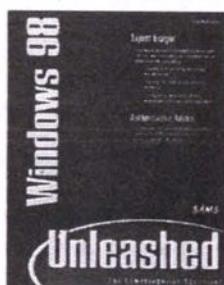
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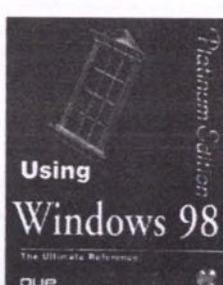
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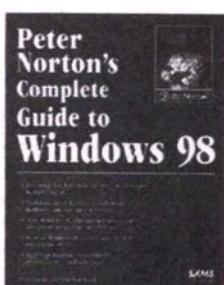
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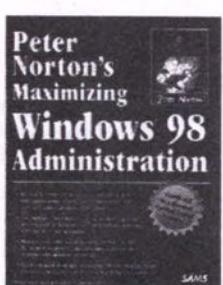
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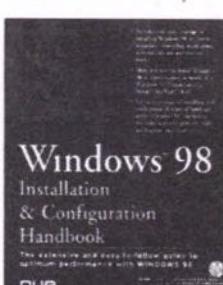
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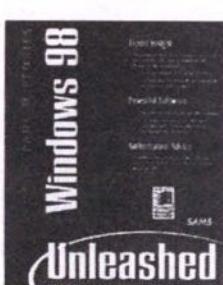
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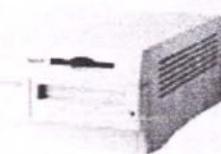
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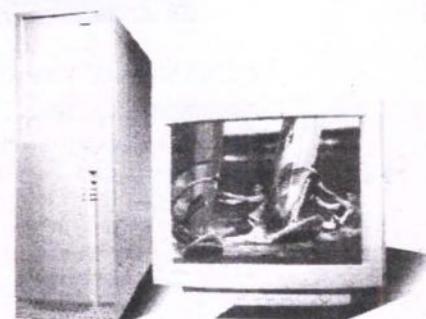
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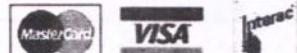
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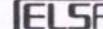
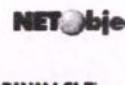
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MS Office 98 makes its debut on the Mac

Major suite overhaul brings Mac users back into the corporate mainstream

By Peter Milburn

No, the headline is not a misprint. March 1998 saw the much-anticipated release of Microsoft Office 98 for the Macintosh, one of the culminations of a renewed partnership between Apple and Microsoft that was announced at the July 1997 MacWorld Expo. In response to customer requests, Microsoft now supports Apple technologies such as QuickTime and Macintosh drag-and-drop functions. In order

to give Office 98 consistency with other Mac apps, Microsoft also revised the look-and-feel of the product to conform to the so-called "platinum appearance" of Mac OS 8.1.

Unlike its predecessor MS Office 4.2—a slow, bug-infested Windows port that was released more than three years ago—Office 98 represents a complete rewrite of the office productivity package from the ground up. To accomplish this, Microsoft invested millions of dollars and hired a crack team of hundreds of Mac programmers, sequestering them for more than a year in office premises in Silicon Valley.

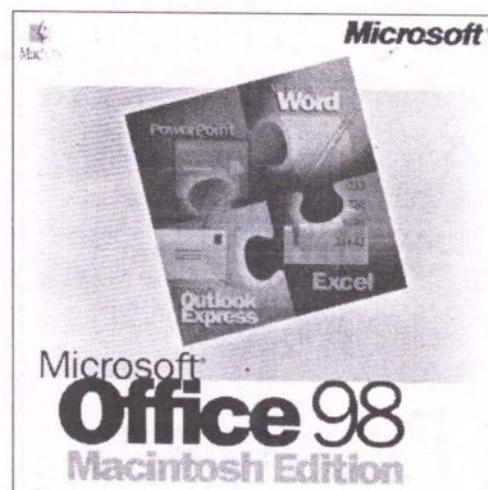
Because it is a rewrite, Microsoft decided to break with the past and make Office 98 100 percent native PowerPC-coded. One of the benefits of this decision is great enhancement of application performance. However, the break with the older 680x0 processor architecture means sites that have both older and newer generation Macs will have to go through a hardware upgrade cycle if they wish to deploy Office 98.

Easy Installation

Like many applications today, Office 98 now ships only on CD-ROM. One of the biggest improvements over the previous version is the simplification of the installation. The menu

and dialog driven method of past versions is now replaced by procedure of simply dragging a folder labeled MS Office 98 onto your hard disk. Within a few moments the default package of Word, Excel and PowerPoint is copied to your machine.

Other optional installations include Internet Explorer for Web browsing and



Outlook Express for managing your email. Microsoft also includes another optional installation called Value Pack, which includes

add-ons such as clip art, templates, fonts and office assistants. Microsoft also includes a custom installation option if you only want to install specific components of the office suite.

One of the best features of Office 98, which is unique to the Mac, are the "self-repairing" applications. Part of the process of installing Office 98 involves the automatic placement of numerous extensions into the Mac system folder. In the past, if any one of these extensions was accidentally moved or disabled, then it became impossible to launch any Office applications. You can imagine the frustration of trying to track down and re-enable these missing components, especially if you administrated a large site.

In Office 98, Microsoft solves this problem by creating an invisible, compressed duplicate version of all the system components needed to run the applications. If any of the original components are missing when you attempt to launch Office 98, it automatically detects and replaces them from the duplicate version on your hard disk.

A word of caution: if you want this feature to work reliably, then don't rename the MS Office 98 folder or any of its contents. If you want easy launching access to any of the applications, it's recommended that you create an alias that you can rename and drag to

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Cons: Onerous disk and RAM requirements, sites with a mix of 680x0 and PowerPC Macs will have to replace older machines

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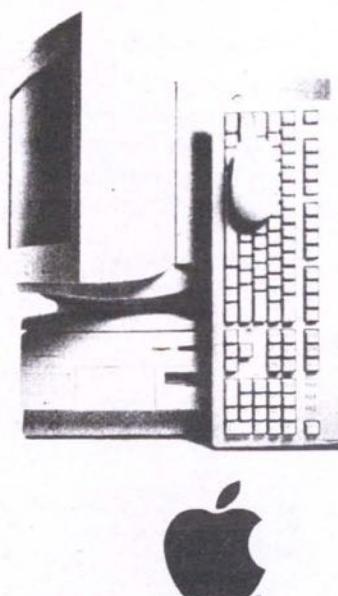
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the desktop.

To run Office 98 comfortably, Microsoft recommends a minimum configuration of a 120 MHz Power Macintosh with 32 MB of RAM and at least 90 MB of available hard disk space. However, if you plan on using Word, Excel and PowerPoint concurrently then 64 MB of RAM is a more realistic requirement.

It's also recommended that you enable virtual memory through the memory control panel when running Office 98. With virtual memory turned on, the minimum suggested RAM allocation is 8 MB for Word, 6 MB for Excel and 10 MB for PowerPoint. Turn virtual memory off and you will incur a large hardware penalty by boosting the RAM requirements to about 12, 10 and 14 MB respectively. When using the minimum RAM settings with smaller documents, I occasionally encountered messages from Word and Excel that they were running low on memory. Be prepared to boost the settings if you plan on working with larger documents.

If you want to remove the office productivity from your Mac, Microsoft provides a utility aptly named Remove Office 98. If you decide to purchase Office 98, be sure to go to Microsoft's Web site get the updated version of the utility. In the rare circumstance where a user moves the Office 98 library out of the MS Office 98 folder and into the System folder, the initial release of this utility will move your System folder into the trash if you decide to uninstall. Oops.

Office refinements

Enabling virtual memory dramatically improves the performance of application

launch times. On a Power Macintosh G3/300 model the launch times for Word, Excel and PowerPoint take about one second. I have to admit that the immediacy of having software ready to go when you want to use it adds immeasurably to the user experience.

Migrating from the older version of the software to Office 98 won't be a problem for most users. For the most part, all of the components of the suite still maintain the same look. Word has received the biggest overhaul of any of the packages and makes much heavier use of contextual menus. Spelling and grammatical errors are automatically flagged by red and green squiggle underlines, which in turn become pop-up menus with correction suggestions when you hold the Control key down and click with the mouse. These contextual menus also come in handy in Excel and PowerPoint.

Probably one of the biggest advantages for mixed Mac-Windows corporate sites is that Office 98 and Office 97 share a common file format. No longer does the Mac user have to use MacLink or specialty translators to exchange Office files through the network or by disk. Because the file formats are now binary-compatible (and will remain so for the foreseeable future) the process is completely transparent. This capability is long overdue and will probably be the most compelling reason for mixed-platform corporate sites to go with this upgrade.

To help provide some comic relief in the course of a workday, Microsoft has provided an automated help agent named Max. Max probably qualifies as "the world's most advanced Tamagotchi" and is characterized as

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a Mac Classic with arms and legs. He resides in a small floating window and watches your every action in case you request assistance. I found him unobtrusive and entertaining, but if you grow tired of or become distracted by Max, you can simply close his window.

One of the pleasant surprises in Office 98 is the way Microsoft takes advantage of animation and sound to give positive user feedback in the human interface. For example, when you save a file, scroll or insert/delete a row or column in a spreadsheet, these actions confirm your intent.

Parity more or less

Office 98 comprises the same core functionality that has helped bring the Mac version of the office productivity suite close to parity with the Windows version. However, there are some features that are still unique to each platform. For instance, the Macintosh version of the Visual Basic Environment does not support some of the editing and debugging features that exist in the Windows version. Also, Office 98 does not directly support Data Access Object libraries. Cross-platform developers must use libraries that support ODBC drivers for Sybase SQL Server, Oracle and FoxPro. These are included with the Value Pack on the Office 98 CD. Microsoft details

some of these more subtle issues on its Web site (<http://www.microsoft.com/macoffice/productinfo/migration2.htm#Compare>).

The bottom line

There's an adage from the film *Field of Dreams* that "if you build it, they will come." In the case of the Macintosh user it should read, "if you build it with quality, they will come." For the most part it appears Microsoft has met that objective. Initial sales estimates indicate Office 98 will be an overwhelming success.

The result of the company's effort is impressive, but the tradeoff is both heavy hardware requirements and a fat purchase price.

Was the wait and all of the hype associated with Office 98 worth it? The short answer depends on how and what you use your Mac for. If you're in an office environment that requires easy sharing of documents with Office 97, then Office 98 makes a lot of sense. This feature all by itself has dramatically lowered the barrier for acceptance of Macs into corporate sites that are standardized on Office 97.

However, if you work independently from an environment that uses Office 97 as a standard, then Office 98 will probably be overkill. If you're in that category, a package such as ClarisWorks Office—with its low hardware resource requirements, extensive translators and affordable sticker price—will likely be a better choice. □

Peter Milburn is a consultant with Elite Systems Support located in Calgary, Alta. He can be reached on the Internet at elite.systems@shaw.wave.ca.

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Organizing outlines

By Helen Bradley

This month we look at how to quickly and easily organize and reorganize your documents using the outline options in your word processor. If you're using Word 97 the great news is that you don't have to do

any hard work to create an outline—the program does it all for you! If you're using WordPro 97 or WordPerfect 8 you'll need to drive the program a little bit harder but the benefits are worth the effort.

An outline is a top-down view of the structure of a document from the highest level

headings down to the lower-level headings and the body text below these. When you take an "outline view" of a document you can collapse it to show only headings to a certain level making it easier to see how your document is structured. Because you can expand and collapse small portions of your docu-

ment, the outline view is useful when creating long and complex documents by allowing you to effectively "hide" all the text except the portion you are working on.

Another reason to use styles

If you don't regularly use styles in your documents, then the ability to have Word automatically create an outline for you is another good reason for changing your habits and starting to use them. (Check out TCP July 98 at <http://www.tcp.ca> for tips on using styles and tailoring built-in styles to suit your needs.)

Outlines on a plate!

If you do use Word's built-in heading styles (Heading 1, Heading 2... etc.) then Word will already have an outline for your document. You can see this by selecting View, OUTLINE and your editing screen will change to display your document with a number of symbols down the left of the page opposite each paragraph.

These symbols indicate the level of each paragraph in your document. You can have up to nine levels in a document corresponding to Word's nine heading levels (Heading 1... Heading 9) but you'll find that, for most uses, three to four levels are sufficient.

Making sense of the symbols

The plus (+) symbol indicates that a paragraph has text following it at a lower level. This includes text formatted with a style that Word doesn't recognize as a specific outline level. The minus (-) symbol indicates that the paragraph has no text following it at a lower level. A paragraph with a small square beside it is text at the "body text" level of the document, which is generally text formatted with the NORMAL style.

When you are in outline view you'll notice that some of your formatting, such as paragraph spacing and indenting, will disappear. Word applies temporary indenting to show you the different levels in your document more clearly, but your own formatting is still there.

The Outline toolbar

The OUTLINE toolbar appears when you are in Outline view and contains buttons to display your document in different ways. The buttons numbered 1 through 7 allow you to expand or collapse your document so you view only some of the headings. If you select 1, you'll see only first level headings. If you select 3, you'll see the top three levels etc. You can display all the document by selecting the SHOW ALL HEADINGS button or show just the headings down to level 9 by clicking the SHOW ALL HEADINGS button twice.

If you are viewing only some of headings in your document you can expand a section to see the headings and text below it by selecting the heading and select the EXPAND button. Every subsequent press of the EXPAND button will reveal an additional level of heading until all the headings and body text are visible. You can reverse this and progressively collapse the document using the COLLAPSE button.

Using the collapse and expand features makes it easy to move around a long document and to get a feel for its organization without having the actual text get in the way. If you find a paragraph at the wrong level of the document, you can change it using the PROMOTE and DEMOTE buttons or turn it into

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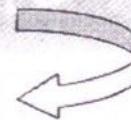
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body text by selecting the DEMOTE TO BODY TEXT button.

The SHOW FORMATTING button allows you to hide fancy heading formats in outline view if they prove a distraction on the screen.

What you can do in outline view

One neat option in outline view, that isn't available elsewhere in Word, are buttons to move paragraphs up and down. Select the symbol opposite the paragraph to move and then select the MOVE UP or MOVE DOWN button on the OUTLINE toolbar to move the paragraph. Notice that any paragraphs that follow this paragraph that are at a lower level will move with it.

Adding a style to a level

If you use your own styles rather than Word's heading styles you can easily associate your style with an outline level so it will be treated like any of the built-in styles. To do this, place the insertion point in a paragraph that is formatted in the style you want to link to an outline level and select FORMAT, STYLE. Select MODIFY, FORMAT, PARAGRAPH and select the INDENTS AND SPACING tab, in the OUTLINE level: list box select the level that you want to associate with this style and select OK, OK and CLOSE.

Shortcut keys

Most of Word's outline features are accessible by shortcut keys, here are a few useful ones:

Ctrl + Shift + N	Applies Normal Style and demotes paragraph to body text level
Ctrl + Alt + 1	Applies Heading 1 style
Ctrl + Alt + 2	Applies Heading 2 style
Ctrl + Alt + 3	Applies Heading 3 style
Alt + Shift + left arrow	Promote the paragraph and apply a higher heading
Alt + Shift + right arrow	Demote the paragraph and apply a lower heading style
Alt + Shift + plus (+)	Expand the text below a heading
Alt + Shift + minus (-)	Collapse the text below a heading
Alt + Shift + up arrow	Move the selected paragraph up
Alt + Shift + down arrow	Move the selected paragraph down

Using the mouse

In addition to the keyboard and the toolbar buttons you can promote or demote any heading using the mouse. Hold the mouse pointer over the outline symbol next to the heading and drag it to the right to demote it and to the left to promote it. You'll see a guideline appear to show the level you are altering the paragraph to. You can also drag a paragraph's outline symbol up or down to move it—this time you'll see a horizontal guideline showing where it will be moved to.

Working in outline view

If you work in outline view rather than NORMAL or PAGE view, you'll find that it behaves a little differently. When you type a heading in one style and press ENTER the next line will appear in the same style instead of reverting to NORMAL style as it would in the other views. This is because outline view is designed to allow you to create a document from the top down, typing major headings first and then creating the subheadings under each heading and so on.

You should use outline view to create a

Continued on page 104



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Organizing Outlines

Continued from page 103

document only when you really need to create a document outline. Because Word creates the outline for you, you won't lose the benefits of outlining if you create your documents in another view using styles rather than in outline view itself.

Printing an outline

You can use outline view to collapse your document to a summary form showing only the major headings and then print this by selecting the PRINT button on the toolbar or select FILE, PRINT. If you select FILE, PRINT PREVIEW the entire document, rather than the outline view will appear, and printing from PRINT PREVIEW won't print the outline correctly either.

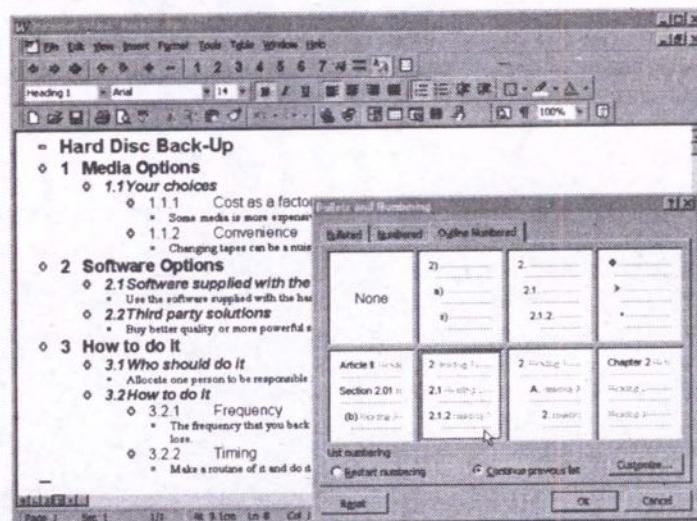
Auto numbering

You can easily apply numbering to any outlined document by selecting the document or the paragraphs you want to number and select FORMAT, BULLETS AND NUMBERING. Select the OUTLINE NUMBERED tab and select your choice of numbering styles from the options visible. The top row of options will number both the headings and the body text while the bottom row will number only the headings.

If none of the option suit your needs, select the one closest to what you want and select CUSTOMIZE. The CUSTOMIZE NUMBERED OUTLINE LIST dialog allows you to change the number style, alignment and indenting of the numbers as well as adding text and symbols to surround each number. Use the WHAT'S THIS Help button to learn more about the options or look up BULLETS AND NUMBERING in the help index.

Other suites

If you aren't using Word 97 and you're not sure how to access the outline function in your word processor, try searching for "out-



Using the BULLETS and NUMBERING option allows you to quickly and automatically number all the headings in your document.

line" in the Help options. Here are quick instructions for Corel WordPerfect 8 and Lotus WordPro 97:

Corel WordPerfect 8

WordPerfect's outline feature is more like a traditional outline and is not automatically created for you. To turn it on, select INSERT, OUTLINE/BULLETS AND NUMBERING and select the NUMBERS tab. From the options on the screen you can select a numbering system to use or

select EDIT to adapt one to your needs.

When you have outlining turned on you can type your document. Demote a paragraph by selecting the DEMOTE button on the toolbar or press TAB before you type the paragraph and promote one by selecting the PROMOTE button or select SHIFT + TAB before you type. To type body text, press ENTER after a heading and then press the backspace key to remove the bullet or number which WordPerfect will have inserted, before typing your text.

Because TAB and SHIFT + TAB control the outline levels, you'll need to use the INDENT key F7 or CTRL + TAB if you need to move to the next Tab stop.

WordPerfect's toolbar includes options for viewing different outline levels, moving paragraphs and hiding and displaying body text. If you have created an outline using numbers you can later replace the numbers with headings by highlighting the outlined text and select INSERT, OUTLINE/BULLETS & NUMBERING, select the TEXT tab and select HEADINGS.

Using Lotus WordPro 97

WordPro has a fairly sophisticated but difficult to find outline function. To access the outline options select VIEW, SET VIEW PREFERENCES and select the OUTLINE tab. Select "Show outline" to display the document in outline view and make your other choices from the dialog box.

If your document already uses paragraph styles WordPro will create an outline for you when you select the "Quick outline setup using paragraph styles" button. In this dialog you can select each style used in your document and nominate its level in the outline. If you use WordPro's heading styles you'll find the levels are already assigned for you. To add numbering to your outline select a style from

the "Numbering sequence to apply" list box and select APPLY. When you have completed your choices select OK and OK again.

Right click on any outline number in the editing screen to see the options available to promote and demote headings, move paragraphs and expand and collapse all or part of the document. To return to the usual view of your document select VIEW and select a view from the top of the menu. □

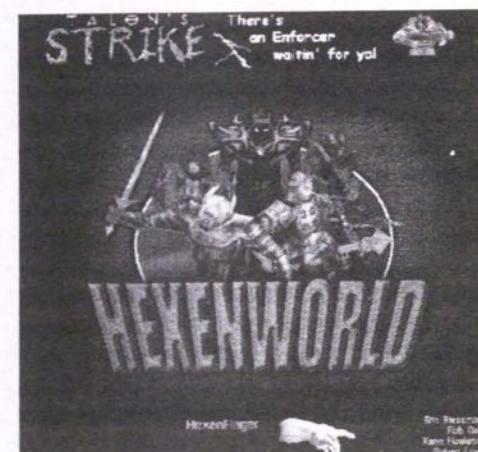
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GrimJack's top ten game sites

Continued from page 86

9. Hexen World • Home of all things Hexen, this is the best place to keep up with the latest mods and developments for the series of games from Raven Software.

<http://www.hexenworld.com>



10. Tom's Hardware Guide • You can't play the latest games without some serious hardware. Tom's hardware is the home of the most in-depth coverage of PC Hardware you're likely to find. He also has a lot of information about how to tweak your system for maximum performance.

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Stepping stone

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The most interesting option, Enhance By Example, lets you preview nine possible adjustment settings at a time. Graphics wonks will prefer Adobe Photoshop's more precise image-editing controls, but this is a pretty good second place. One glaring problem, though: PhotoEnhancer doesn't read compressed TIFFs.

ProOCR100 is a fairly easy to use. Like other OCR programs, you can execute the process step by step, or push the Auto button to follow through on all your settings automatically. A third option, the OCR Wizard, guides novices through the process.

ProOCR100 is one of the few products out there that is cheap, fast, and good. Visioneer claims it's the fastest and most accurate OCR package around; while I can't verify that, I can say it is pretty quick and, for the most part, very accurate. Clean originals were converted with more than 99 percent accuracy; and even a faded dot-matrix original yielded about 25 percent of the original text (not very high, but remarkable considering its condition).

Unfortunately, ProOCR100's great performance is hampered by problems with some of its other features. Clicking Auto often crashed the program when the document was brought in from PaperPort Deluxe (as opposed to running ProOCR100 on its own). Choosing to preserve the original document's appearance works... sort of. When I tested this option and exported the results to Microsoft Word, everything looked fine. Closer inspection revealed ProOCR100 used a strange mix of frames and columns to achieve this effect.

A minor gripe is that ProOCR only deals with monochrome scans. This is perfectly understandable for text, but the program does offer the option of recognizing text and graphics simultaneously. Suppose I want to keep the graphics in color?

While these problems are annoying, they can generally be worked around with a minimum of fuss until Visioneer fixes them (they are going to fix them, right?). The overall result is that ScannerSuite's core programs follow through on their promise, providing effective document-management tools at a reasonable price. □

Emru Townsend (emru@cam.org) would like Visioneer and other companies to stop using boxes that are 75 percent empty space.

Simplifying the search for Japanese pop music

• NB—Finding Web sites devoted to Japanese pop music, or "Jpop," just got easier thanks to a new Windows application that allows users to search for sites directly from the URL field of their browser. Just type in "jpop speed" into the URL field to query the Jpop search engine for sites devoted to pop group "Speed," for example. You can also specify other search engines, like "av" for AltaVista, thus removing the need to visit the home page directly.

<http://jpop.hatch.co.jp>

Tucows

Continued from page 78

you set a sound for this event, it plays the sound while opening the program, and if it's a non-Windows application, this disables the program's ability to detect your sound hardware and may cause the program to malfunction. You can safely set a sound for Close Program.

Once you have assembled the elements of your desktop theme, you can construct a .theme file that instructs Windows on how to use them. Check out the Editors and Tools Section on FreeThemes for a selection of downloadable theme creation software. Read the instructions included with each program, as they all vary slightly in features and function.

Creating and distributing startup and shutdown screens to go with your new theme is as easy as editing images. Open your image editor and start a new 640x480 file. Once you have created your masterpiece, convert it to 256 colors and resize to 320x400 (do not check the Maintain Aspect Ratio check box). Save the image as logo.sys in the bitmap format. This requires that you put the double quotation marks around the name when you save it. If you are making a wait screen, the filename should be logow.sys, and if you are making the shutdown screen, the filename should be logos.sys. Take a moment to back-up your current logo screens in a separate directory. The startup logo.sys is in the root directory of the C: drive of your computer, while the logow.sys and the logos.sys screens are in the C:\Windows directory. When you have backed them up, put the new screens in the appropriate directories and reboot your computer to see your new theme. □

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USER GROUPS

ATTENTION USER GROUPS: Send your listing (maximum 120 characters) for the September issue by Friday, July 31. Submissions run for one month only in the local edition. *The Computer Paper* reserves the right not to print submissions which are deemed unsuitable.

ACM/SIGGRAPH Computer Graphics. 2nd Tuesday, at 420 Homer St. Call Tom Berryhill at 734-3976.

ADAM OWNERS! Vancouver Island Senior ADAMphiles (Visa): newsletter, meetings, supplies. Contact David Cobley, #17, 885 Berwick Rd, Qualicum Beach, BC V9K 1N7. (604) 752-1984.

ALT 2600 VANCOUVER USER GROUP. Meeting are 1st Friday of each month at Pacific Center Mall by payphones in food court, north of Dunsmuir at Granville 4pm to 9pm. Starts early to catch the evening shift 2600ers. For more information contact Steve via email at <steve@vanbc.wimsey.com> or <steve@rainbow.descon.com>

AMIGA USER GROUP (PaNorAmA) For meeting times and place call: Ray Norman 589-7199 or Robert Hardy 942-8364. BBS numbers (604) 270-4561

APPLES B.C. COMPUTER SOCIETY. A User Group for Macintosh and Apple II's. Macintosh meetings are on 3rd Wednesday of each month at the York House School in Vancouver at 7 p.m. Novice and other special-interest groups are held mid-month. Apple II meetings are on 1st Monday of each month at 7 p.m. at the Century House in New Westminster. For further information call 437-9935 or 299-9597.

ATARI USERS! Vantari, P.O. Box 3614 Main Post Office, Vancouver, BC V6B 3Y6. Bill Sutherland 988-1450; Don Hatch 433-8055. Meets 2nd Wednesday, 7:30 p.m., Hastings Comm. Ctr., 3096 E. Hastings.

B.C. EDI USER GROUP. For more information call 532-8204 (preferred), or voice mail 532-8219.

B.C. INTERGRAPH USERS GROUP (BCIUG). Contact: Mike Barnes 528-1936 (voice) or 528-2944 (fax) for info on next meeting.

B.C. REGIONAL USERS GROUP SOCIETY of Hewlett-Packard Users. For information, call Darren Stachuk at 661-8753 or BCRUG at 661-8048.

BIG BLUE AND COUSINS. PO Box 5309, Station B, Victoria BC V8R 6S4. Monthly meetings second Monday, 7:30 at Pro Patria Legion (auditorium), 411 Gorge Road East. Also, special interest group meetings. For further info please call 382-3934.

CANADIAN INTERGRAPH USERS GROUP CONFERENCE. September 8-11, 1996. Delta Meadowvale, Mississauga, ON. "Drive The Open Road". Contact Laura Barnman, Intergraph, 2912 Memorial Dr. SE, Calgary AB T2A 7R9. Voice: (403) 569-5562 Fax: (403) 569-5801 e-mail: ljbarnm@ingr.com

CANADIANS ON COMPUSERVE. All Canadians around the world, as well as anyone interested in Canada and Canadian issues can join in on interesting discussions in The Canada Forum on CompuServe. Politics, international policies, Canadian culture, and regional information can all be found in the forum and don't forget to check out the large selection of library files. On top of this, Machine Translation between Canada's two official languages allows all Canadians to communicate with each other.

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CIPS VANCOUVER SECTION. (Canada's largest Association for Computer Professionals). CIPS Members enjoy unparalleled networking and professional development opportunities at our monthly meetings and special events. Discounts offered for student members. PO Box 20522, Howe St, Vancouver, BC V6Z 2N8. Phone (604) 681-2796 or Fax (604) 689-1879 for next meeting date.

COREL ARTISTS USER GROUP. Last Tuesday of every month, 7:00 to 10:00 pm, at Kwantlen College in Richmond, BC. Monthly newsletter. Contact: Bev Harcus, 533-5854.

DATA-LINK/USERS GROUP. Tel 321-3387. PC support BBS: 321-8873 (24 hr service), with specialized self-made BBS software. The purpose of this User group is to allow users to get together for problem solving, discussion of setup and to meet people. Call by voice 8 a.m.-4:30 p.m. ONLY please. This group is dedicated to RoboBOARD by Seth Hamilton. Other BBS software are welcome. Membership is free!

ELECTRONIC COMMERCE CANADA (ECC) is an organization dedicated to advancing the utilization of electronic commerce technologies and standards. Based in Ottawa, Ontario ECC holds regular monthly education seminars and an annual Symposium. web site: <www.ecc.ca>, email: <office@ecc.ca> Phone: (613) 237-9900

FOXSOFT, EDMONTON'S FOXPRO USERS GROUP-second Tuesday, 7:00 pm, Grant MacEwan City Centre Campus, East Wing, Room C-137/C-135, 10700-104th Ave. Contact: Ken Rayner at 437-0315 or Robin Stuart at 460-3712 (days). Info Bulletins on BBS 457-4105.

GENERIC CADD USERS GROUP. Contact: Frank Zander (604) 582-8283. BBS: 294-8287 (9600 n,8,1).

INDEPENDENT COMPUTER CONSULTANTS ASSOCIATION OF BC. The ICCA is a non-profit association of consultants who provide services in the field of Information Technology. The objectives of the ICCA are to provide a forum where consultants can network with each other, exchange ideas, and improve their business and computer skills. Monthly meetings with speakers. For further information contact us at: Suite#720-999 W.Broadway,Vancouver,BC V5Z 1K5,Tel:(604) 734-2747 Fax: (604) 738-4080 or E-Mail:icca@castar.ca WWW:<http://www.icca-bc.org/icca/>

LOTUS NOTES. - see "Pacific Notes User Group" MACWEST COMPUTER SOCIETY. Meetings

for members and visitors include Shareware copy sessions, software and hardware demos, and Q & A sessions. If you use a Macintosh, check us out! General meetings: 2nd Wednesday of each month: Beginner's meetings: 3rd Wednesday of each month. 7:30pm, at Surrey School Conference Centre at 9260-140 Street . Web site: http://www.macwest.org/usergroup/index.html. MacWest First Class BBS modem number: 502-9593. Login as: Guest/guest. Messages and information at: 268-9530

MS ACCESS TECHNICAL USER'S GROUP. For those who want to participate in learning more about MS Access. For information call Greg Hind at 454-0262, from 9:00 to 5:00.

NANUGS (Northern Alberta Novell Users Group Society) - meets quarterly at the CompuSmart store on Mayfield Road. For information, please e-mail to nanugs@freenet.edmonton.ab.ca or phone Mike Brown (403)487-7666.

OBJECTS USER SOCIETY. See British Columbia OpenStep Group (B.C.O.G.).

PACIFIC NOTES USER GROUP (PACNUG) - Lotus Notes users meet the last Wednesday of each month (except August and December) 5:30pm at IBM. Contact Delores Beier at 988-2141 or dbeier@aw.ca

PC/MAC USER GROUP. Wanted Professional Photography/Graphic Designers to share, network and learn the latest hardware and software programs available.

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PORT COQUITLAM COMPUTER CLUB. Commodore, Amiga - IBM-Mac. 1st & 3rd Tuesday, 7:30 p.m., Room 8 Minnekhada Middle School, 1390 Laurier Ave., Port Coquitlam. Ed Dyer-Publicity at 942-0954.

T.I.99/4A COMPUTER B.C.99er Users Group, every Thursday 7-10 p.m. For information, call Ron: 522-2598.

TEENS IN VANCOUVER USER GROUP. For teens under the age of 16 interested in doing computer related projects regularly, WWW, programming, games; anything! The main goal is to share computer knowledge and to make friends. If there are any homeschooleds interested, that would be great. If interested, please call Orton Mak at 926-2835.

THE TOPKIDS CLUB. A user group for kids, teens and parents. Monthly meetings are family focused with software/hardware demonstrations, guest speakers, Windows and Mac tips and online demonstrations. A BBS is available to members. Call Garland Coulson 279-5439 or email garland_coulson@topkids.com

Multimedia

VANCOUVER AUTOCAD USERS SOCIETY. 1st Wed. of the month, 7:30 p.m., B.C.I.T. Bby. Campus Bldg. SW5 Room 1850. Contact: Frank Zander (604) 582-8283.

VANCOUVER DELPHI DEVELOPERS ASSOCIATION meets once a month at the Liquor Distribution Branch Head Office in East Vancouver. The meeting is usually on the 2nd or 3rd week of the month on Tue or Wed depending on availability of facilities. The purpose of the group is to provide a common and regular forum for Delphi developers to get together and discuss Delphi related issues. All meeting notices are sent via fax or e-mail. Please contact Michael Li at mli@infocan.com, or fax (604)736-5866 or tel: (604)736-5888, ext:728

VANCOUVER ENTERPRISE FORUM. 432-8761.

VANCOUVER FOXPRO USER GROUP (VFUG). is a Special Interest Group affiliated with the Van. NT User Group. We offer support for developers and users of Classic (2.X) and Visual Foxpro. Meetings are held every 1st Tuesday of the Month(except June), beginning at 7pm. They are held at the Vancouver Film School (420 Homer Street), drop-ins are welcome. Tell Security at the door you are with the VANTUG meeting. Please consult our Website for membership info & Meeting agenda (<http://www.foxprovancuser.org>). E-mail Joy at joytan@uniserve.com or Kinberley at bccomp@planeteer.com

VANCOUVER GEOWORKS USERS CLUB. For further info, please call: 683-7490 (eves)

VANCOUVER GEOGRAPHIC INFORMATION SYSTEMS USER GROUP. Meetings are held on the 1st Wednesday of each month, September through May, at B.C.I.T. Town Square Room 'C' at 7:30pm. Contact Dwight at 940-1518 for information.

VANCOUVER KAYPRO USERS GROUP-VANCOUVER PORTABLE COMPUTER CLUB (VPCC). AMO 17, friendly members, heritage CPM software, the latest DOS and Windows files, plus inexpensive access to the planetwide Fidonet! Visitors welcome to our BBS. Contact person: Jay Siegel, 4251 Lancelot Dr, Richmond, B.C., V7C 4S4, 271-1519; BBS 271-5934

VANCOUVER NETWARE USERS GROUP (VNUG) is an official user group recognized by the Netware Users' International Assoc. and supported, in part, by Novell. Meetings are held at 6PM on the 3rd Wednesday of every month at PBSC Training Centre (HongKong Bank of Canada Building, 900-885 West Georgia Street,Vancouver,BC) Building elevator access is available until 6:30PM, so please be on time. For further information or meeting topic announcements call our voice mail at 689-VNUG (689-8684) <http://www.vnug.org>

VANCOUVER OS/2 USER GROUP. Attended by OS/2 gurus and novices alike and well supported by IBM. The large and lively meeting is held on the first Wednesday of each month at the BC Tel Building, 3777 Kingsway, Burnaby and starts at 6:45 pm. Join us for an informal workshop beginning at 11:30 am on the first and third Saturdays

VPCUS CLARION-TOPSPEED SIG- Clarion is a full-featured, industrial-strength DOS &Windows application development tool. Its superior high level language and re-usable templates produce compilable code and tight EXE's that run fast and are royalty free. This lively SIG attracts a range of participants from seasoned professional programmers to new users and the curious. Meets the 2nd Tuesday of every month. Contact John Gokka, 736-7762.

VPCUS DEBUG SIG (Data Base Users Group) Emphasis is on solving problems of data management with special reference to Paradox. Bring a blank 3.5 inch disk to pick up goodies from the meeting. Meetings for the next few months will be informal, and held at a local pub. Contact Brad Froese, 939-3093.

VPCUS Educational Seminars — Members \$5, Non-members \$15. Various topics,

times and dates. Contact Gwenda Ellwood. 737-8674.

VPCUS HTML AUTHORIZING SIG- This SIG is a good place to come for informal discussions with other HTML developers, or to get advice on building business and personal Web pages Topics include graphics and HTML, plug-ins, the browser wars, jamba, connectivity issues and marketing on the internet. Both novice and advanced HTML authors are welcome. We meet on the 2nd Tuesday of each month. Contact Brenda Delaney: bdelaney@unix.ubc.ca or Virginia Green: virginia@arts.ubc.ca for meeting info, and to get our email list.

VPCUS Internet SIG - New to the info highway? Get to know the internet and the Web with an experienced guide. Contact Joe Thompson for details, 685-6945.

VPCUS LINUX SIG-Linux is the free alternative to Windows, DOS, and OS/2. It's the tried and true Unix OS configured to run on PC's. The system is open, full featured, robust, and getting better all the time. Most web servers run on Linux. See what makes it so attractive to those who know. Meets on the 3rd Monday of each month. Contact Stan Claussen at 532-6846, or email: clausson@direct.ca

VPCUS NETWORKING SIG- This is the place if you are a network administrator and you need a break from beating your head against a wall, or want to relate with people who actually care what you're talking about. Come and share Novell glory stories, tips, tricks and support ideas. Currently on hiatus, we're looking for volunteers interested in getting this SIG going again. Contact Brenda Delaney: bdelaney@unix.ubc.ca, or fax 224-2143 for more information.

VPCUS WINDOWS PROGRAMMING SIG- For programmers and intermediate to expert Windows users who are interested in PC programming, particularly in C, Access, Delphi, VB, Java, etc. Meets on the 2nd Tuesday of most months. Contact Casey Hawthorne at 879-2703, or email: casey@istar.ca

VPCUS WINDOWS USERS SIG- For Windows users at all levels. Learn and share tips, techniques, pitfalls, configurations, and optimizing strategies for best using WIN'95. A new SIG to meet on the 3rd Wednesday of the month. Contact Casey Hawthorne at 879-2703, or email: casey@istar.ca

Help Desk Institute Local Chapter. An organization providing training, education and a networking forum for Help Desk Professionals. Those people who help computer users with hardware or software problems. Please send your e-mail to Karen Yuen at: KYUEN@VSE.CA

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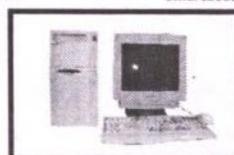
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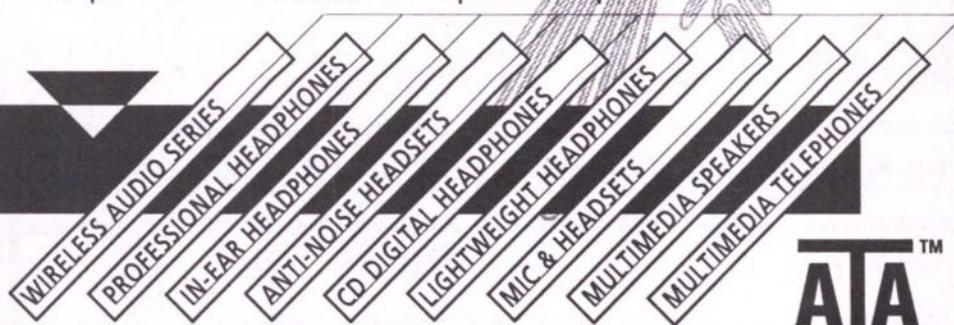
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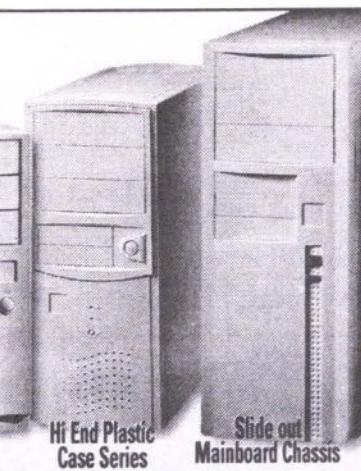
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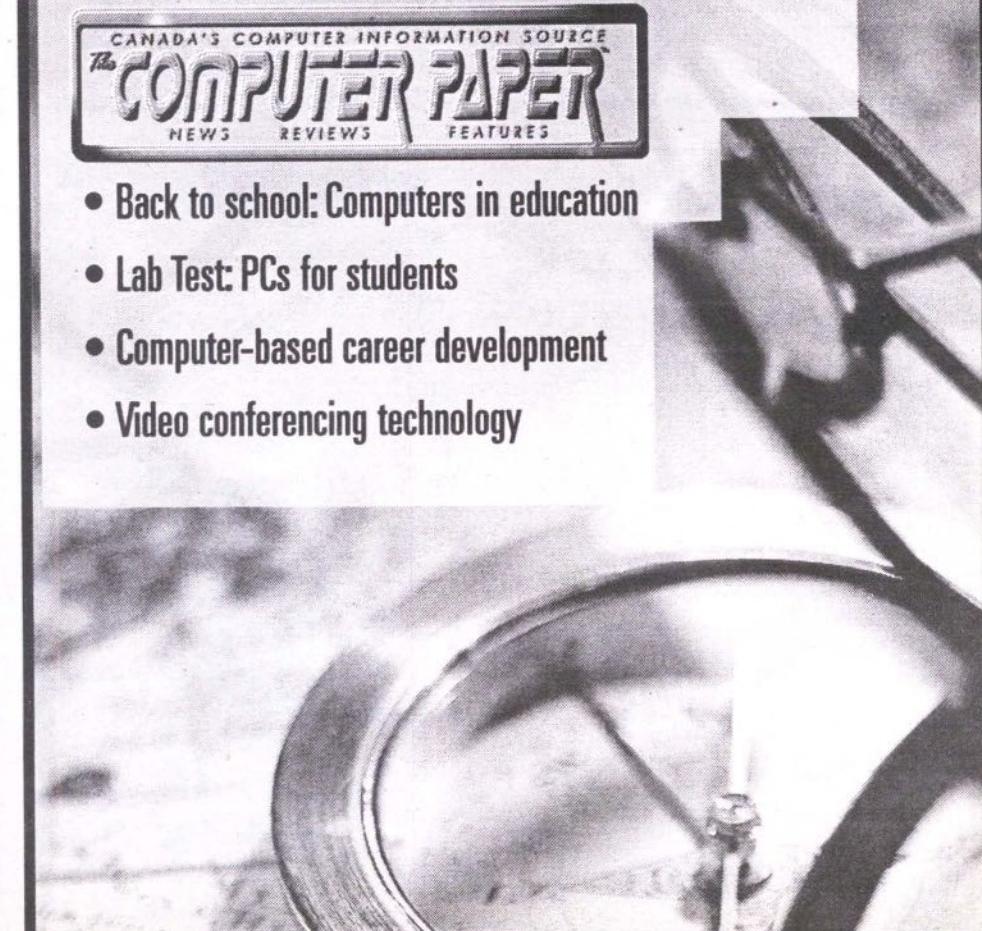
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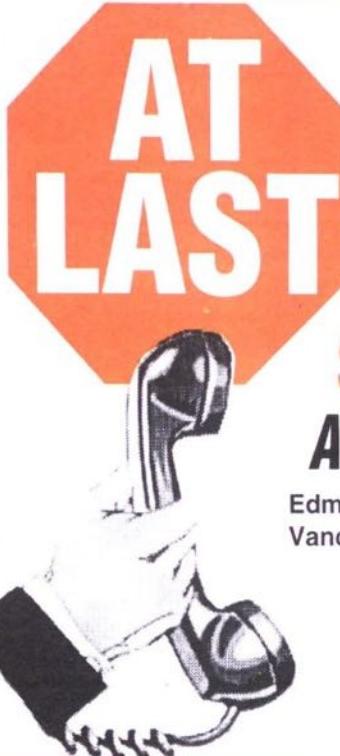
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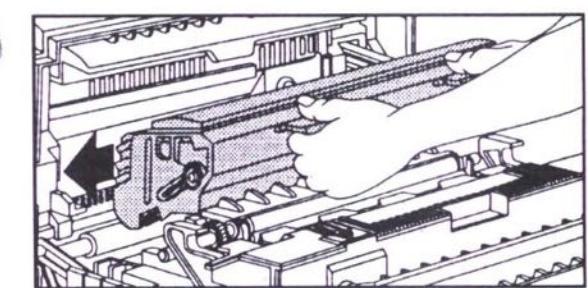
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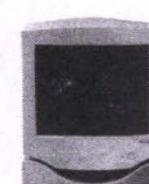
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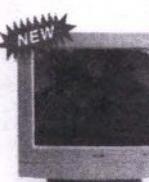
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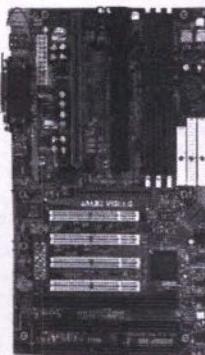
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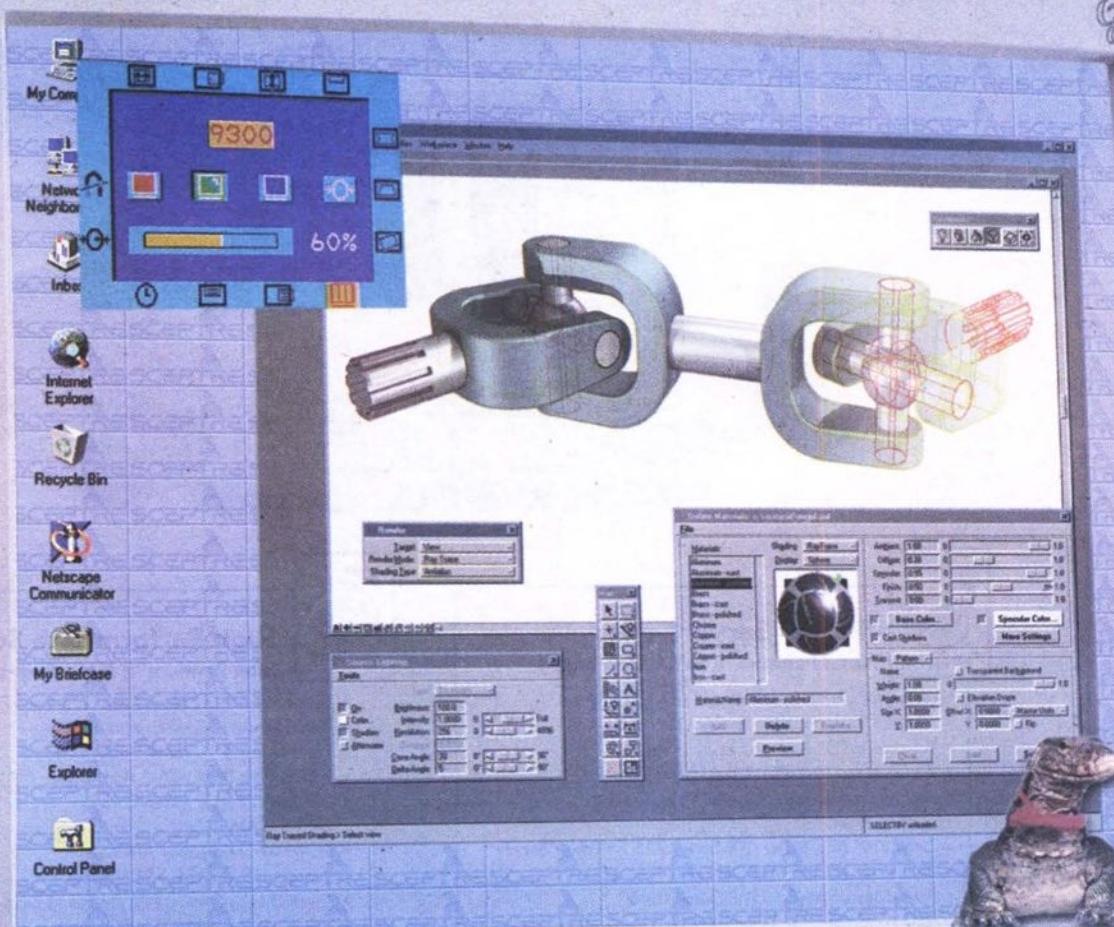
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In any large, complex, industrialized nation, there is a limit to what an individual can do to defend his or herself, and a limit to the remedies that an individual can obtain for damages suffered, and to prevent further harm. Take the situation to the global stage—which the borderless Internet logically leads to—and it becomes apparent that the security of the increasingly interconnected world of computing is an international responsibility.

So, at some point, we're talking about a need for collective action, for law writing, law enforcement and government intervention at local, national and international levels. The problem is, some of the biggest threats to computer security are posed by the same governments that we want to protect us.

I know who I am but who are you?

Governments exist on multiple levels, both official and unofficial, publicly visible and accountable, and hidden. Even an overtly democratic national government such as that of the United Kingdom, the United States, France or Israel has an invisible component, which conducts espionage and clandestine military operations, and withholds secrets considered essential for "national security" away from the eyes of its own citizens. Increasingly, those secret activities have an element of computer technology in them—intercepting electronic data, storing it in databases, and analyzing it with the aid of computer tools.

Even countries that are officially allied to each other conduct electronic espionage against each other, often in the arena of economic competition, and increasingly with the aid of telecom, computer and satellite surveillance. No matter what laws are officially enacted to protect privacy, for example, interception of network data by governments would appear to be increasing. I say "would appear to be," because secret government activities, especially possibly illegal ones, are often protected from scrutiny under the blanket of "national security."

One of the best ways to get some sense of what's really going on is not to ask a government's own representatives what it is doing, but to listen to its opponents' or victims' accusations of info-crime. Add up all of the claims and counter-claims, and it soon appears that everybody is using computers to spy on everybody else.

For example, a recent book by a French author recounted tales of U.S. espionage actions against France, some of which were "busted" by

the French authorities, and then publicly revealed, to the embarrassment of the U.S. What the French author was suspiciously quiet about were similar activities by the French secret agency DSGE, which operates an extensive, ongoing program to steal industrial secrets from many of its supposed Western allies and friends.

Recent newspaper articles in Canada have alleged French successes in stealing information on Canadian bids on international contracts. Espionage techniques ranged from old fashioned bribery to electronic surveillance to copying or stealing data files. The payoff for this espionage campaign has been billions of dollars of new business and thousands of jobs for the French economy, and similar losses to Canada.

Nations have no friends, only interests'

The United States has a host of government agencies that rely on digital technology to spy on that country's friends (including Canada) and enemies. Agencies such as the Central Intelligence Agency (CIA), the Defence Intelligence Agency (DIA), Drug Enforcement Administration (DEA) and many others depend on electronic eavesdropping and digital satellite data for much of their intelligence. Although officially restricted in the kinds and amounts of electronic eavesdropping they can do at home, U.S. intelligence agents have very few restrictions on what they listen to outside of U.S. territory.

Overshadowing all the other intelligence agencies on the planet in terms of its ability to listen in on every kind of electronic conversation, however, is the U.S.'s little known or understood National Security Agency (NSA). Endowed with a gigantic budget that is said to be similar to the CIA's (no-one knows for sure), the NSA exists to watch, listen, decode, and sift through all the world's communications.

Through a network of private contractors and government labs, the NSA benefits from the U.S.'s development of computer automated translation technology, which does a quick sort of intercepted non-English language data, and identifies messages of possible interest for further, human scrutiny. The NSA and the U.S.'s other military, police and space agencies, have been the principal instigators of the development of computer technology in the last 50 years, and they continue to be one of the main markets for the latest in supercomputers, encryption, decryption, data analysis and communications technologies.

The growth of the Internet has become an area of great interest to government spooks. About 54 percent of Internet information

queries are currently routed through the AltaVista search service, which is owned by Digital Equipment Corp. When I was in Palo Alto, Calif. recently, I asked a Digital researcher if this was a matter of interest to U.S. government agencies. In the presence of witnesses, he evaded the question. He approached me afterward in private and said, "Of course it is. That's behind the development of the translation software. We can't talk about it."

Firms such as IBM, Oracle, Digital, Silicon Graphics, Rockwell, and others have been intimately involved in "black" projects, which involve developing the capability for the NSA, CIA and others to spy on anyone the U.S. deems necessary. By comparison, the surveillance activities of private corporations and local law enforcement agencies are relatively minor.

Canada, too, has its own info-warriors, in organizations such as the RCMP, the Canadian Security Intelligence Service (CSIS), and our own electronic ears, the Communications Security Establishment (CSE). However, compared to the Americans, Russians or Israelis, we are in the little leagues.

So what?

If you're not actively involved in smuggling heroin or plutonium, should you care if U.S. or other nations' spooks have the ability to read your email? In the short term, probably not. They are interested in the big picture and the big players.

However, the history of America's dominance in computing has shown endless examples of American technology flowing irresistibly over the planet, being picked up by other nations and individuals. The futile American attempt to restrict exports of encryption technology, for example, shows that the U.S. is concerned about its own technology being used against itself, but it has limited ability to control how that technology is used once it gets offshore.

Most nations around the world, including those hostile to the U.S. or the West in general, are gaining proficiency with computer and telecom tools, and building their own info-tech infrastructure. Once the knowledge and tools for computer surveillance and info-war are everywhere, they risk being used more widely.

We face a future where privacy may well become an outmoded concept whether we like it or not, and where information technology is a principal weapon in the great game of economic, political and military competition. Given their history, putting governments in charge of telecom security and privacy may be like putting Dracula in charge of the blood bank. □

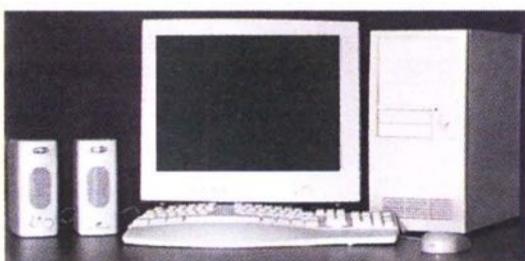


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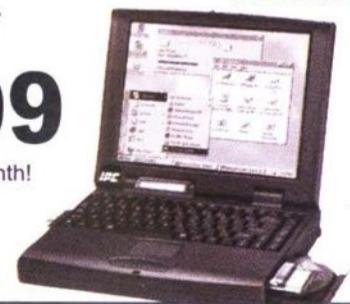
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